

THE ATHENÆUM

Journal of English and Foreign Literature, Science, the Fine Arts, Music and the Drama.

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SATURDAY, SEPTEMBER 1, 1877.

PRICE
THREEPENCE
REGISTERED AS A NEWSPAPER

ANTI-VIVISECTION.—PRIZE OF TWO HUNDRED GUINEAS offered for the best MEDICAL ESSAY. Time extended to 1st of MAY, 1878. For particulars apply, by letter, to Messrs. LORIMER & GILLIES, Printers, Clyde-street, Edinburgh.

SCHOLARSHIPS IN SCIENCE. ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.

TWO SCHOLARSHIPS, each of the value of 10*l.*, open to Students who have not entered at any London Medical School, will be offered for COMPETITION on SEPTEMBER 28. Subjects: Zoology, Botany, Chemistry, Physics. One Scholarship will be awarded to a Candidate (if of sufficient merit) under 20 years of age; the other is limited to Candidates under 25 years of age.

An EXHIBITION of 50*l.* in the same Subjects, and one of 40*l.* in the Subjects of Preliminary Education, open to Students who have entered the Hospital in October, WILL BE COMPETED FOR in THAT MONTH.

For particulars apply, personally or by letter, to the RESIDENT WARDEN of the College, St. Bartholomew's Hospital, E.C.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.—The WINTER SESSION will begin on MONDAY, October 1st. The Clinical Practice of the Hospital comprises a service of 70 Beds, inclusive of 34 Beds for Convalescents at Highgate. Students can reside within the Hospital Walls, subject to the College Regulations.—For all particulars concerning either the Hospital or College, application may be made, personally or by letter, to the RESIDENT WARDEN of the College. A Handbook will be forwarded on application.

THE MIDDLESEX HOSPITAL MEDICAL COLLEGE.—The WINTER SESSION will open on MONDAY, October 1st, with an INTRODUCTORY ADDRESS, at 2*30* p.m., by Mr. ARTHUR HENSMAN.

Two Entrance Scholarships, of the Annual Value of 25*l.* and 20*l.* respectively, will be competed for on October 1st, and following days. For Prospectuses or further information apply to the DEAN or the RESIDENT MEDICAL OFFICER, at the Hospital. ANDREW CLARK, Dean.

LONDON SCHOOL OF HOMŒOPATHY, 52, GREAT ORMOND-STREET, Russell-square, W.C.

President.—The Right Hon. LORD EUBURY. Bankers.—Union Bank of London, Argyll-place.

The WINTER SESSION will open on TUESDAY, October 2nd, with an INTRODUCTORY ADDRESS, at Five p.m., by Dr. H. HUGHES.

LECTURES.

On Materia Medica and Therapeutics, Dr. Richard Hughes. On Principles and Practice of Medicine, Dr. D. Dyce Brown. Clinical Lectures will be given at the Hospital, by Dr. J. Dalley Blackley and Dr. D. Dyce Brown. Clinical Lectures on Surgery, by Dr. James Jones. Clinical Lectures on Diseases of the Ear, by Dr. Cooper. The Hospital contains 20 Beds. Contributions are requested in aid of the Funds of the Hospital and for the general purposes of the School. For further information as to Fees, Free Admission, &c., apply to Dr. BARN, Hon. Secretary, or to FRED. MAYCOCK, Secretary.

CRYSTAL PALACE PICTURE GALLERY.—OPEN all the YEAR ROUND for the RECEPTION and SALE of PICTURES, by the British and Foreign Schools.—For particulars apply to Mr. C. W. Wain.

ART TEACHER (Kensington, No. 3).—WANTED immediately, in KING'S LYNN, an ART TEACHER, to instruct a Night Class and to form Day class. The Evening Classes realize nearly 60*l.*, and the Private and Day Classes would realize as much more.—Apply to EDWARD L. KING, Hon. Sec., King's Lynn.

EXPERIENCED CHOIR-MASTER and TEACHER of SINGING in SCHOOLS and COLLEGES.

Address Mr. GEORGE WELLS, St. Cecilia House, South Hackney.

THE MUSICAL CRITIC of a LONDON DAILY PAPER, having some leisure, will be glad, upon moderate terms, to contribute to a Provincial Paper a LONDON LETTER upon Musical and Literary Topics; also Reviews of Books. Address X, Messrs. Adams & Francis, Advertising Agents, 50, Fleet-street, E.C.

CRITICISM.—NOTICE to AUTHORS, JOURNALISTS, and OTHERS.—Mr. J. H. SMITH, late Editor of the *Contemporary Critic and Contributor*, presents his compliments to Authors, Journalists, and others, and begs to announce that he is open to CRITICIZE LITERARY PRODUCTIONS, either for private use or public circulation, at moderate terms. Estimates given for general and minute Criticisms. Arguments referred to order for Members of Debating Societies. Laconic Articles written to order.—Address Mr. J. H. SMITH, Office's Chambers, Halifax.

TO AUTHORS.—MANUSCRIPTS, &c., COPIED, neatly and expeditiously, on reasonable terms.—Apply to A. BROWN & Co., Booksellers, Aberdeen, N.B.

TO AUTHORS OF NOVELS and other WORKS.—INTERMEDIARY between Author and Publisher, saving former all the usual trouble and delay. Advertiser, an Author and Publisher's Reader, has exceptional facilities for ensuring the acceptance by leading London Publishers of MSS. of merit. Highest references to former clients. Fee, Two Guinea on signed Agreement with Publisher.—Reviews, care of T. Colman, 161, Strand, W.C.

WRITER OF LEADERS, NOTES, and SUM- MARIES of NEWS WANTED for a Daily Newspaper.—Apply by letter, stating age and experience, to Box 294, Post-office, Bristol.

THE Authoress of several published Novels of Domestic Interest would like to DISPOSE of the COPYRIGHT of one hitherto unpublished.—Address INFLEXA, care of C. Mitchell & Co. 15 and 13, Red Lion-court, Fleet-street, E.C.

A GENTLEMAN, with considerable experience in the highest rank of Metropolitan Journalism, and who has a thorough acquaintance with Contemporary Politics (Home, Foreign, Indian, and Colonial), wishes for an ENGAGEMENT as Editor or regular Contributor to a Daily or Weekly Journal. Would purchase a Share in the Paper.—Address X. W., Mr. Alexander, 24, Old Strand-street, Cavendish-square, W.

PRESS.—An experienced Journalist and Writer of high literary attainments will shortly seek RE-ENGAGEMENT as EDITOR, SUB-EDITOR, or in other capacity.—Address C. G. 109, Bury New-road, Manchester.

PRESS.—WANTED immediately, RE-ENGAGEMENT as REPORTER, Verbatim and good Descriptive Writer. Steady habits.—H. S., Guardian Office, Chester.

SUB-EDITOR (Assistant) WANTED for a High- Class DAILY PROVINCIAL NEWSPAPER. Must be a first-rate Summary Writer; thoroughly up in all the details of Sub-Editorial Work, and perfectly reliable in all respects. Send specimens of Work, and state age, Salary expected, with full details of experience, &c.—Address DELTA, care of C. Mitchell & Co., Press Agency, 15 and 13, Red Lion-court, Fleet-street, London, E.C.

EDITOR, ASSISTANT-EDITOR, or GENERAL CONTRIBUTOR, RE-ENGAGEMENT in either of these capacities desired by experienced Journalist and successful Author.—Address LITTEAUDE, Messrs. Adams & Francis, Advertising Agents, 50, Fleet-street, E.C.

A GOOD VERBATIM REPORTER, of Nine Years' experience, who prefers employment in or near the Metropolis, and would go on trial for three months at a low salary, will soon want a SITUATION. Superior Education in Classics, Science and General Literature; good Descriptive Writer; excellent Literary Critic, and thorough Sub-Editor. Of high moral character; total abstainer; married.—Apply to MISSISSOIRE, care of Adams & Francis, Advertising Agents, 50, Fleet-street.

NEWSPAPER PARTNERSHIP.—The Proprietor of Three Newspapers (Commercial) requires a PARTNER. Active or Sleeping, prepared to invest 5,000*l.* for Half Share of Property. Address FAORISTON, care of Messrs. Clarke, Son & Platt, Advertising Agents, 50, Gracechurch-street, London, E.C.

TO NEWSPAPER PROPRIETORS.—The Son of a Newspaper Publisher is open to an ENGAGEMENT. Is a Verbatim Note-taker, smart Paragraphist, and neat Descriptive Writer. A Practical Printer, and thoroughly conversant with the business details of a Weekly Paper. Reliable and energetic.—E. S. 43, care of Messrs. Deacon & Co. 15, London-hall-street, London.

C. MITCHELL & CO., Agents for the Sale of Newspaper Property, beg to Notify that they have several important Newspaper Properties for Disposal. Principals only treated with.—15 and 13, Red Lion-court, Fleet-street, E.C.

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PUBLICATION OF EDUCATIONAL WORKS.—All Authors desirous of bringing their Works under the direct notice of the Scholastic Profession are informed that ELVE BROTHERS have unusual opportunities of assisting them in this respect, as their Travellers, who visit the greater part of England twice a Year, call on all the principal Educational Establishments in the Kingdom, and by this means introduce, in the most efficient way, all Books committed to their care.—6, Charterhouse-buildings, Aldersgate, E.C.

NOTICE.—E. J. FRANCIS & CO., Printing Contractors, Wine Office-court, E.C., and Took's-court, E.C., are prepared to submit ESTIMATES and enter into CONTRACTS for LETTER-PRESS PRINTING and LITHOGRAPHY.

WANTED, in a beautiful situation in North Wales, a TUTOR for a BOY of FIFTEEN. Scientific Man preferred.—Address, stating qualifications, salary, age, &c., P. Barn Elms, Barnes, London, S.W.

LESSONS TO LADIES in MATHEMATICS, by ELLEN M. WATSON, Exhibitor of University College, London. Engagements may be made for Private Lessons, to begin in October.—Address Miss WATSON, 173, Euston-road, Euston-square, N.W.

WESTON-SUPER-MARE.—Mr. G. WHYTE, M.A. (Edin.), receives a limited number of SONS of GENTLEMEN to prepare for the Public Schools, &c. Breeding Climate, thorough Training, and Home Comforts.

WOOLWICH.—The LINE—COOPER'S HILL.—Mr. WILLIAM F. WALKER, M.A. C.E. Ex-Classical Scholar and Mathematical Senior Moderator (Univ. of Dublin), PREPARES PUPILS for the above-named COMPETITIONS. July, 1877; passed 18th (Woolwich), 18th, 19th, and 20th (Cooper's Hill); Five for the Line (10th, 24th, &c.); Twenty-one successful for the Line during 1877, including 2nd (University), 4th, 10th, &c. (Open Competition). Highest Places obtained in the Woolwich, Line, and Cooper's-Hill Examinations during many consecutive years.—Address WILLIAM F. WALKER, M.A., 51, Lower Mount-street, Dublin.

UNIVERSITY HALL, GORDON-SQUARE, LONDON, W.C.—STUDENTS of UNIVERSITY COLLEGE reside in the Hall under Collegiate discipline.—Particulars as to Rent of Rooms, Scholarships, &c. may be obtained on application to the PRINCIPAL or the SECRETARY, at the Hall.

UNIVERSITY COLLEGE, LONDON.—The GOLDSMID PROFESSORSHIP OF GEOLOGY is VACANT, in consequence of the resignation of Professor Morris. An Endowment of 200*l.* per annum is attached to the Chair. Applications for the appointment will be received, on or before OCTOBER 1st, at the office of the College, where further information may be obtained. TALFOURD ELY, M.A., Secretary.

UNIVERSITY COLLEGE (LONDON) SCHOOL.

Head Master—H. WESTON EYE, M.A. Vice-Master—E. R. HORTON, M.A.

The SCHOOL WILL RE-OPEN for NEW PUPILS on TUESDAY, September 25th, at 9.30 a.m. The School Session is divided into three equal Terms. Fees 8*l.* per Term, to be paid at the beginning of each Term. Discipline is maintained without corporal punishment or impositions. A Playground of about two acres in extent, including several Five's Courts and a Gymnasium, is attached to the School. The School is close to the Gower-street Station of the Metropolitan Railway, and only a few minutes' walk from the Terminal of the North-Western, Midland, and Great Northern Railways. Season Tickets are granted at half-price to Pupils attending the School.

Prospectuses, containing full information, may be obtained at the office of the College. TALFOURD ELY, M.A., Secretary.

QUEEN'S COLLEGE, GALWAY. SESSION 1877-8.

FACULTY OF MEDICINE.

The FIRST MATRICULATION EXAMINATION for the Session 1877-8 will be held on FRIDAY, the 19th day of October. The EXAMINATIONS for Scholarships and Exhibitions of the First Year will commence on MONDAY, the 22nd day of October; for Scholarships and Exhibitions of the Second Year, on THURSDAY, the 18th.

By a recent Regulation of the Council, all Scholarships and Exhibitions of the Second, Third, and Fourth Years may now be competed for by Students who have attained the requisite standing in any Medical School recognized by the Senate of the Queen's University, and have passed the Matriculation Examination in the College.

At the ensuing Examination, Eight Scholarships, of the value of 25*l.* each, will be offered for competition, viz. Two to Students of the First, Second, Third, and Fourth Years respectively. In addition, Four Exhibitions of 15*l.* each will be offered: Two to Students of the First, and Two to Students of the Second Year respectively; and Two Exhibitions of 10*l.* each: One to Students of the Third and Fourth Years respectively.

Further information and copies of the Prospectus may be had on application to the Registrar.

By order of the President, ARTHUR HILL CURTIS, M.A. LL.D., Registrar.

August 25, 1877.

QUEEN'S COLLEGE, 43 and 45, HARLEY-STREET, W. Incorporated by Royal Charter, 1851, for the General Education of Ladies, and for granting Certificates of Knowledge.

Patrons. HER MAJESTY THE QUEEN. H.R.H. THE PRINCESS OF WALES. H.R.H. THE PRINCESS LOUISE.

Visitor.—THE LORD BISHOP OF LONDON.

The CLASSES for the Michaelmas Term will meet on THURSDAY, October 4th. The Entrance Examination for New Pupils and for Candidates for Scholarships will be held, at 10 a.m., on TUESDAY, October 2nd. Individual Instruction in Vocal and Instrumental Music. Classes in Greek and for Conversation in Modern Languages will be formed, if practicable, on the entry of Six Names.

A Preparatory Class has been formed for the entry of fourteen Years and upwards, who are not able to pass the Entrance Examination. Boarders are received by Miss Woods, at 41, Harley-street, and Mrs. CARPENTER, opposite the College. An early application is requested, there being but a few Vacancies, with full particulars, may be obtained on application to Miss GOSZ, the Lady Resident, at the College Office.

E. H. PLUMPTRE, D.D., Principal.

QUEEN'S COLLEGE SCHOOL, 43 and 45, HARLEY-STREET, W.

Lady Superintendent—Miss HAY.

The CLASSES will RE-OPEN for the Michaelmas Term on THURSDAY, September 27th. Entrance Examination for New Pupils on WEDNESDAY, September 24, at 10 a.m. Prospectuses may be had on application to Miss GOSZ, at the College Office.

E. H. PLUMPTRE, D.D., Principal.

QUEEN'S COLLEGE, 43 and 45, HARLEY STREET, W.

HIGHER LECTURES FOR ADULTS.

A SYLLABUS of the Courses for the Michaelmas Term will be issued in SEPTEMBER. E. H. PLUMPTRE, D.D., Principal.

TRINITY COLLEGE, LONDON. (Incorporated by Special Charter under Act of Parliament.)

DEPARTMENT OF EVENING CLASSES.

The THIRD WINTER SESSION will commence on THURSDAY, October 4th, at Eight p.m., with a Public Reception of Past and Present Students and their Friends.

The MUSICAL DIVISION includes separate or combined Courses of Instruction in Harmony, Counterpoint, Canon and Fugue, Instrumentation, Musical Form, Organ and Piano-forte, Solo and Class Singing, &c. Professors—Edmond Rillat; J. G. Saunders, Mus. B.; J. W. Hinton, M.A. Mus. D.; Bradbury Turner, Mus. B.; Humphrey J. Clark, Mus. D.

The ARTS DIVISION comprises Classes in Latin, Greek, French, German, English Composition, Mathematics, Natural Sciences, &c. Professors—E. Passwater, LL.D.; W. J. Jennings, B.A.; A. Motteux, &c. Also, a Matriculation Class for London University, under the direction of Philip Magnus, B.A. B.Sc. Lond.

The MANCHESTER, DUBLIN, and SHREWSBURY Branches will also RE-OPEN OCTOBER.

Prospectuses and other particulars may be had from the ASSISTANT-SECRETARY, Trinity College, Weymouth-street, Portland-place, W.

OWENS COLLEGE, MANCHESTER.

Principal—J. G. GREENWOOD, LL.D.
I. DEPARTMENT OF ARTS, SCIENCE, AND LAW.
 Greek—J. G. Greenwood, LL.D. (Cambridge), (Fell. Univ. Coll. Lond.)
 Latin, Comparative Philology—A. S. Wilkins, M.A. (Camb.), (Fell. Univ. Coll. Lond.)
 English Literature, History—A. W. Ward, M.A. (Fell. St. Peter's Coll., Camb.)
 English Language—T. Northcote Toller, M.A. (late Fell. Christ's Coll., Camb.)
 Mathematics—Thomas Barker, M.A. (late Fell. Trin. Coll., Camb.)
 Natural Philosophy, Physical Laboratory—Balfour Stewart, LL.D.
 F.R.S., Thomas H. Core, M.A.
 Civil and Mechanical Engineering, Geometrical and Mechanical Drawing—Osborne Reynolds, M.A. F.R.S. (Fell. Queen's Coll., Camb.)
 Logical and Mental and Moral Philosophy, Political Economy—Robert Adamson, M.A.
 Jurisprudence and Law—Alfred Hopkinson, M.A. B.C.L. (Stowell Fell. Univ. Coll. Oxford).
 Chemistry and Metallurgy—H. E. Roscoe, B.A. Ph.D. F.R.S.
 Organic Chemistry—C. Schoerlemmer, F.R.S.
 Animal Physiology and Zoology, Vegetable Physiology and Botany—W. O. Williamson, F.R.S.
 Physiology and Histology—Arthur Gamgee, M.D. F.R.S.
 Geology and Palaeontology—W. Boyd Dawkins, M.A. F.R.S.
 Mineralogy—Charles A. Burghard, Ph.D.
 Oriental Languages, German—J. F. H. Lallemand, B. de Sc.
 French Language and Literature—J. F. H. Lallemand, B. de Sc.
 Free Hand Drawing—William Walker.
 Harmony and Musical Composition—Edward Hecht.
 With Assistant Lecturers and Demonstrators in all the principal subjects.

II. DEPARTMENT OF MEDICINE.
 Dean of the Medical School—ARTHUR GAMGEE, M.D. F.R.S.

WINTER SESSION.

Physiology and Histology—Arthur Gamgee, M.D. F.R.S.
 Anatomy, Descriptive and Practical—Morrison Watson, M.D. F.R.S.
 Comparative Anatomy—W. O. Williamson, F.R.S.
 Chemistry—Henry E. Roscoe, B.A. Ph.D. F.R.S.
 Organic Chemistry—C. Schoerlemmer, F.R.S.
 Clinical Medicine—William Roberts, M.D. F.R.P.
 Principles and Practice of Medicine—J. E. Morgan, M.D. M.A. F.R.C.P.
 Surgery—Edward Lund, F.R.C.S.
 Practical Surgery—Samuel M. Bradley, F.R.C.S.
 General Pathology and Morbid Anatomy—Henry Simpson, M.D.
 Julius Dreschfeld, M.D. M.R.C.P.
 Hospital Instruction—The Physicians to the Royal Infirmary; the Surgeons to the Royal Infirmary.

SUMMER SESSION.

Physiology and Histology—Arthur Gamgee, M.D. F.R.S.
 Obstetrics—John Thorburn, M.D.
 Materia Medica and Therapeutics—Alexander Somers, M.R.C.S.
 Daniel Jaco Leach, M.D. M.R.C.P.
 Medical Jurisprudence and Public Health—Arthur Ransome, M.D. M.A.
 Practical Microbiology—Julius Dreschfeld, M.D. M.R.C.P.
 Ophthalmology—Thomas Winder, M.R.C.S.
 Practical Chemistry—Henry E. Roscoe, F.R.S.
 Botany—W. O. Williamson, F.R.S.

Assistant Lecturers and Demonstrators.

Anatomy—Alfred H. Young, M.B.
 Physiology—John Priestley.
 The Lectures in Anatomy, Physiology, and Chemistry are recognized by the University of Edinburgh, and attendance upon any two of these courses for six months will count as one of the Winter Sessions required by the University for the M.B. degree.

III. DEPARTMENT OF EVENING CLASSES.

Classes conducted by the Professors and Lecturers of the College, and external Lecturers are held during the Winter Months in nearly all the Arts and Science subjects.

THE NEXT SESSION WILL COMMENCE—In the Arts, &c., Department on the 2nd October; in the Medical Department, on the 1st October; and in the Evening Classes, on the 12th October—Candidates for admission must not be under fourteen years of age; and in the Arts and Science Department those under sixteen will be required to pass a preliminary Examination in English, Arithmetic, and Elementary Latin.

Prospectuses of the several Departments may be obtained from Mr. Cornum, Piccadilly, and other Booksellers in Manchester; and at the College.

J. HOLME NICHOLSON, Registrar.

THE LONDON INTERNATIONAL COLLEGE.

Spring-grove, near Isleworth, W. English, French, and German taught to every Boy, in addition to Mathematics, Classics, and Natural Science. Each Boy has a separate Bed-room.

THE NEXT TERM COMMENCES ON TUESDAY, September 12th. Apply to the Head Master, H. R. LADEL, M.A.

THE BRIGHTON COLLEGE.

Principal—The Rev. CHARLES BIGG, D.D., late Senior Student and Tutor of Christ Church, Oxford.

Vice-Principal—The Rev. JOSEPH NEWTON, M.A.
 The NEXT TERM commences on TUESDAY, September 12th.

HYDE PARK COLLEGE FOR LADIES, 115, GLOUCESTER-TERRACE, HYDE PARK.

The JUNIOR CLASSES begin SEPTEMBER 17th.
 The SENIOR CLASSES, NOVEMBER 1st.

Prospectuses, containing Terms, Names of Professors, &c., may be had on application to the Lady Resident.

BEDFORD COLLEGE (for LADIES), 8 and 9, York-place, Portman-square.

The SESSION 1877-78 will begin on THURSDAY, October 11—TWO ARNOTT SCHOLARSHIPS will be awarded by Open Entry—Candidates to send their names to Miss MARTINEAU, at the College, before September 20th.

Prospectuses, with particulars of scholarships, boarding, &c., to be had at the College.
 H. LE BRETON, Hon. Sec.

HARROW—PREPARATORY SCHOOL.

Head Master—The Rev. C. H. TANDY, M.A.

BOYS are prepared for the various Public Schools. Entrance Scholarships, and other Examinations, in October, November, and January.

THE SCHOOL will RE-OPEN on THURSDAY, Sept. 14th, 1877.

HIGH SCHOOL OF EDINBURGH.

SESSION 1877-78.

The Edinburgh School Board have made arrangements by which a thoroughly practical as well as a thoroughly liberal education can be imparted. The Classes are strictly limited, and care is taken to give such a kind of culture of which he is most capable, and which is most necessary for him.

Full information is contained in the Report and Prospectus, which may be had on application to the JARVIS, at the School; to the Clerk of the Edinburgh School Board, 8, Castle-street; or to the principal Booksellers in Edinburgh.

HEATH BROW SCHOOL, HAMPTSTEAD.

THE SESSION (1877-78) BEGINS ON WEDNESDAY, September 13th.
 Classics and English Subjects, Rev. E. M. Geldart, M.A., and Mr. Charles Casal, LL.D.; German, Rev. E. M. Geldart, M.A.; Mathematics and Natural Philosophy, John Bridge, M.A., London; Chemistry, Mr. H. Maiden, under the direction of Professor Barlt, M.A.; Writing, C. F. King, B.A., London. Writing Master in University College School, Westminster, Mr. W. H. Plak, Head Drawing Master in University College School, Westminster, Mr. A. Winterbottom.
 For Prospectus of the new arrangements address Mrs. Cass, Heath Brow, Hampstead, London, N.W.

THE READING SCHOOL.

HEAD MASTER.
 THE CORPORATION OF READING invite applications for the HEAD MASTERSHIP of the READING SCHOOL, which will become vacant at the end of the present year, on the retirement at that time of the present Head Master.

The School (which was reconstituted under the powers of a special Act of Parliament and commenced in 1567, with a view of establishing in Reading a thoroughly efficient and sound Education, to be a First-Grade School, with a large modern element.

The principal Block of School Buildings, as created in the year 1870, under the superintendence of Mr. Alfred Waterhouse, on a site in the suburbs of the Town of Reading; and this Block comprises Two School-Rooms in the centre, and various Class Rooms and Apartments for School purposes and for the use of the Boys.

Each of these Masters' Houses contains 30 separate Dormitories for Boarders, opening out of a Corridor, which communicates directly with the First Floor of the Master's House. In these Two Houses there is accommodation altogether for about 60 Boarders.

In the year 1873 an additional Block of School Buildings, comprising 50 separate Dormitories for Boarders and other accommodation for more was erected.

There are a School Chapel, a Gymnasium, &c., within the School Grounds.

The entire School Buildings and Grounds, which have been carefully and suitably laid out and planted, comprise an area of about 12 acres. A copy of the Act of Parliament and of the Scheme for the regulation of the School will be furnished to Gentlemen wishing to apply for the Office of Head Master.

The Head Master must be a Graduate of one of the Universities of Great Britain or Ireland.

There are Two Endowments payable to the Head Master; namely, a sum of 100, per annum granted by a Charter of Queen Elizabeth, and a share in the income of an Estate, given by Archbishop Laud, now amounting to about 400, per annum.

The Head Master will have assigned to him, Rent free, the whole of the principal Block of School Buildings, including the Two Masters' Houses and Dormitories therein, he paying the Rates and Taxes and keeping the Buildings and School Grounds in tenable and suitable repair and condition, and receiving for himself or Assistant-Masters, as he may arrange with them, all profits from the Boarders residing therein other than Capitation Fees.

The Head Master will also have assigned to him the additional Master's Residence, erected in 1873, he paying the Rates and Taxes and keeping same in repair; but for this House he will be required to pay the same Rent as is paid by the present Head Master, viz. 400, per annum, at the time of its erection. The Head Master will receive for himself all profits from the Boarders residing with him other than Capitation Fees.

Under the Capitation Scheme the Head Master is entitled to Two-Fifths of all Capitation Fees received from Boys attending the School. The Trustees, however, have arranged with the present Head Master that he should receive Four-Fifths of the Capitation Fees, and also any Fees which may be paid for teaching French, German, and Drawing, and himself pay and provide all Assistant-Masters required for conducting the School.

The Capitation Fees payable under the Scheme are—for Boys under 14 years, a Fee not exceeding 100, per annum; Boys of 14 and under 15, a Fee not exceeding 150, per annum; and for Boys above 15 years, a Fee not exceeding 200, per annum.

The number of Boys in the School at the end of the last term were 108 Day Boys and 138 Boarders.

There is a sum of about 1,000, now available for establishing Scholarships at the School.

All applications for the appointment of Head Master, accompanied by such testimonials as the Candidates may deem it expedient to send, should be sent to Mr. HENRY DAY, Deputy Town Clerk, Town Hall, Reading, endorsed "Application for Head Mastership of the Reading School," on or before SATURDAY, the 29th of September next.

Any further information desired by intending Candidates may be obtained on application to the DEPUTY TOWN CLERK.

HENRY DAY, Deputy Town Clerk, Reading.
 Town Hall, Reading, 30th August, 1877.

ARMY, NAVY, MILITIA, CIVIL SERVICES.

DRAGOMANS, MEDICAL, PRELIMINARY, UNIVERSITY, &c.—THROUGH PREPARATION given by an experienced Berners-street, W.

TUITION BY CORRESPONDENCE, in High

Classics, Logic, the Moral Sciences, English Literature, and Philology, by a SENIOR CLARICAL, Author of Standard Educational Works. Examination Papers Answered. Composition Corrected—L.L.D., Northgate House, Highbury, N.

HOME EDUCATION.—The Widow and Daughter

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SATURDAY, SEPTEMBER 1, 1877.

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LITERATURE

A Note on Charlotte Brontë. By Algernon Charles Swinburne. (Chatto & Windus.)

MR. SWINBURNE is in the habit of criticizing the critics, and it is then that he makes his most brilliant displays as a hard hitter. We confess to a feeling of exhilaration in sitting down to criticize his criticism. We find him proposing here to pass judgment upon Charlotte Brontë, Emily Brontë, and George Eliot; to place them with regard to each other in the constellation of imaginative literature: we find him exercising the judicial function, with no timidity whatsoever; but, on the contrary, with as much boldness as though he were clothed with the authority of the *Athenæum*. To this we do not object, of course; but we have returned to our judgment seat now. If we find that he has succeeded in properly placing these writers, we shall frankly say so; if we find that he has failed, we shall frankly say so: in any case, we shall be frank. For, we need not tell him that the question he raises—the question, "What is going to be the future fate" of novels so full of genius—so full of poetry, and passion, and wisdom, and every kind of power as those he here sits in judgment upon—is one that may be called sacred almost,—such a debt of gratitude do we owe to the three great women that have bestowed them upon us.

And, let us begin by saying that, sharing as we do his admiration of Charlotte and Emily Brontë,—and we think that, for vision, for power of seeing the imagined object and flashing the picture upon the actual senses of the reader, there has, since the second act of 'Macbeth,' been nothing in our literature to surpass the terrible "bedroom scene" in 'Jane Eyre,'—notwithstanding all our admiration of these two wonderful sisters, we do not think that either of them produced a great novel. Therefore, we are not so sure of the future fate of our favourites as is Mr. Swinburne: we wish we were; for surely there were never two such glorious Englishwomen as these two—glorious in their gifts, and glorious in their character. As personalities, how warm they are with colour! It is a pity they were not better looking. But we, for our own part, always think of Emily as Shirley Keeldar: that is the best way—the beautiful Shirley Keeldar, who has more of woman's witchery than any female character in English

fiction, and yet was Emily Brontë too. For, note that it is not enough for the ideal English girl to be beautiful and healthy, brilliant and cultured, generous and loving: she must be brave; there must be in her a strain of Valkyrie; she must be of the high blood of Brynhild, who would have taken Odin himself by the throat for the man she loved. That is to say, that, having all the various charms of English woman, the ideal English girl must top them all with that quality which is specially the English *man's*; just as the English hero, the Nelson, the Sydney,—having all the various glories of other heroes, must top them all with that quality which is specially the English woman's—tenderness. What we mean is, that there is a symmetry and a harmony in these matters; that, just as it was an English sailor who said, "Kiss me, Hardy," when dying on board the Victory,—just as it was an English gentleman who, on the burning Amazon, stood up one windy night, naked and blistered, to make of himself a living screen between the flames and his young wife; so it was an Englishwoman who threw her arms round that fire-screen, and plunged into the sea; and an Englishwoman who, when bitten by a dog, burnt out the bite from her beautiful arm with a red hot poker, and gave special instructions how she was to be smothered when hydrophobia should set in. By what magic of genius did Charlotte Brontë (who never knew twenty men in her life) know us Englishmen so profoundly as to fashion the one heroine in all fiction that, in the flesh, would have sent us crazed? For witchery, no other heroine, as we have said, can stand for a moment beside Shirley Keeldar, not even Diana Vernon. And what a woman to know must she have been who sat for the portrait!

We sympathize with Mr. Swinburne's admiration of her. He puts Emily above Charlotte indeed. This is, perhaps, not surprising; for between him and her there is much in common. If he is the poet of the sea, Emily Brontë is the poet of that which is most like the sea, "the league-long of rolling and breathing and brightening heather, and all the wind, and all the sound, and all the fragrance and freedom and gloom and glory of the high north moorland." He is like her, too, in her pugnacity and indomitable "pluck." Among poets they are by far the most warlike of modern times. What they love is struggle—she with the bracing winds of the moors; he with the bracing onslaughts of the enemies he has managed to bring about his ears. This essay is, of course, full of attacks all round. Every word he says about her is in his very best way, as it ought to be; for, to the Mars of nineteenth century poets, the natural Bellona is Emily Brontë.—

"There was," says Mr. Swinburne, "a dark, unconscious instinct as of primitive nature-worship in the passionate great genius of Emily Brontë, which found no corresponding quality in her sister's. It is into the lips of her representative Shirley Keeldar that Charlotte puts the fervent 'pagan' hymn of visionary praise to her mother nature—Hertha, Demeter, 'la déesse des dieux,' which follows on her fearless indignant repudiation of Milton and his Eve. Nor had Charlotte's less old-world and Titanic soul any touch of the self-dependent solitary contempt for all outward objects of faith and hope, for all aspiration after a changed heart or a contrite spirit or a converted mind, which speaks in the plain-song note of Emily's clear stern verse with such grandeur of antichristian

fortitude and self-controlling self-reliance, that the 'halting slave' of Epaphroditus might have owned for his spiritual sister the English girl whose only prayer for herself, 'in life and death'—a self-sufficing prayer, self-answered, and fulfilled even in the utterance—was for 'a chainless soul, with courage to endure.' Not often probably has such a petition gone up from within the walls of a country parsonage as this:—

And if I pray, the only prayer
That moves my lips for me,
Is—Leave the heart that now I bear,
And give me liberty.

That word which is above every other word might surely have been found written on that heart. Her love of earth for earth's sake, her tender loyalty and passionate reverence for th: All-mother, bring to mind the words of her sister's friend, and the first eloquent champion of her own genius:—

I praise thee, mother-earth! oh earth, my mother!
Oh earth, sweet mother! gentle mother earth!
Whence thou receivest what thou givest I
Ask not as a child asketh not his mother,
Oh earth, my mother!

No other poet's imagination could have conceived that agony of the girl who dreams she is in heaven, and weeps so bitterly for the loss of earth that the angels cast her out in anger, and she finds herself fallen on the moss and heather of the wild moor-head, and wakes herself with sobbing for joy. It is possible that to take full delight in Emily Brontë's book, one must have something by natural inheritance of her instinct and something by earliest association of her love for the same special points of earth—the same lights and sounds and colours and odours and sights and shapes of the same fierce, free landscape of tenantless and fruitless and fenceless moor; but however that may be, it was assuredly with no less justice of insight and accuracy of judgment than humility of self-knowledge and fidelity of love that Charlotte in her day of solitary fame assigned to her dead sister the crown of poetic honour which she as rightfully disclaimed for herself.

And he is like her in the quality of his passion—so much like her, indeed, that he does not seem to recognize (what very likely she never recognized) the radical difference between her passion and Charlotte's. Nor has any critic noticed this. Yet it is a difference in kind. The characteristic of one is *abandon*, that of the other is repression. In 'Wuthering Heights,' indeed (as we said once, when writing of young Oliver Madox-Brown, who showed such a strange precocity of power), "true passion is too often imperfectly simulated by mere lawless violence of speech, by reckless unpacking of the heart." Of hate, for instance,—the easiest of all the passions to depict,—'Wuthering Heights' is full; and the hate is meant to be the sublimation of hate; but Emily Brontë had not yet learnt that hate, though voluble perhaps as hers, vituperative perhaps as hers, when at the common red heat glow, changes in a moment when once that redness, which to her seems heat, has been fanned to hatred's own complexion, whiteness, as of iron at the melting-point; when the heart has grown far too big to be "unpacked" at all, and even the bitter epigrams of hate's own rhetoric—though brief as the terrier's snarl ere he flesh his teeth, or as the short snarl of the tigress as she springs before her cubs in danger—are all too slow and sluggish for a soul to which language at its tensest has become idle play. And if Emily Brontë,—knowing so much less than Charlotte knew after her return from Brussels of that fire that heats at once the deepest hell and the highest heaven of passion,—gives us so often rhetorical abuse as the language of simple hate, it is not wonderful that

her *abandon* fails where Charlotte's repression succeeds in depicting that other passion, compared with which even hate is as the flicker of a rushlight to Salaman's cloak of fire.

How simple and childlike seems all this *abandon* of Emily's passionate scenes when contrasted with the short sharp sarcastic dialogue between Rochester and Jane, at that first *tête-à-tête* in Thornfield Hall. To have written this, a woman must have actually "passed through the fire": no power of imagination surely could have taught her that when a man's attraction of a woman is *magnetic*, as Rochester's was, the woman's feeling is of violent and even angry resistance, and if the poor bird does at last go fluttering towards the serpent's jaws, it is because it *must*. Yet for all this, Mr. Swinburne is, perhaps, right in putting Emily above Charlotte; for, clumsy as is 'Wuthering Heights' in construction—artless, *gauche* and rustic as is the dialogue,—the story is superior to 'Jane Eyre,' to 'Shirley,' and to 'Villette' in that last crowning excellence of the artist, *fusion*. Charlotte grievously sins in this matter;—she sins, to be sure, in good company. For, herein, even Shakespeare is sometimes at fault: even he, like Charlotte in 'Jane Eyre' and 'Villette,' will sometimes fix his eye so firmly upon the individual scene before him, as to half forget that it is only a part of an organic whole—even he will forget himself, and give us an impossible chronology in 'Othello,'—impossible conversions of scoundrels in Angelo and Oliver. And again, if Charlotte, in her defect of fusion, makes two school-girls in 'Shirley' talk such elaborate prose as never was or could be talked by any school-girls whatsoever,—as never was or could have been written, till she herself came among us to write it,—will not even Shakespeare, from defect of this same quality, do the same kind of thing sometimes? Will not even he, for instance, make his Macbeth—dagger in hand and dagger in brain—stand panting at Duncan's door, not to collect strength and breath for the fateful stroke, but to tell the groundlings that "o'er the one half world Nature seemed dead" at that moment, and that "wicked dreams abused the curtained sleep": remarks which, admirable as they would have been in Gray's *Elegy*—dramatic as they would have been in the pensive moonlight in the churchyard at Elsinore,—are not exactly what any real Macbeth would have thought appropriate or profitable at that time and place. The fusion of 'Wuthering Heights,' however, is quite perfect: that infernal world is as harmoniously infernal as though it had been fused in the imagination of Dante, who in this matter excels all since Sophocles, and between whom and Emily, indeed, there was an affinity which it is impossible to touch on here. Yet 'Wuthering Heights' is not a great novel, we think, and we are not so sure as is Mr. Swinburne that it is destined for eternal life. As to that larger question in which this one is contained—the question so admirably discussed by De Quincey—whether prose fiction in its present form, or in any other conceivable modern form, can really be expected to pass into the firmament of literature; whether, in short, the elements necessary to the present vitality of a novel are not, in themselves, seeds of a rapid and sure dissolution in the future—this is a question whose discussion seems, we will confess, premature:

for, with the exception of those novels which have already passed into that firmament,—with the exception that is, of 'Don Quixote' and 'Gil Blas' in one department of the novel, and 'Manon Lescaut' in the other,—a great novel has never yet in any literature appeared.

We say this without hesitation, and notwithstanding such high-class work as that of the Brontës and George Eliot, and notwithstanding 'Tom Jones,' 'Vanity Fair,' 'The Newcomes,' 'Albert Savarus,' 'Honorine.' Leaving out of consideration the *Romance* of Meinhold, of Scott, and of Hugo—a different work of art altogether, seeking a different kind of illusion, and governed by different laws—we may say that, in the present complexity of social life, the forces requisite to the production of a great novel seem to be beyond the compass of the human mind. While the two chief requisites necessary to the production of a great epic, or a great drama are entirely compatible with each other, the two chief requisites for the production of a great novel seem to be, in the present state of society, absolutely contradictory and mutually destructive. To incarnate in a form that is artistic and beautiful,—to express, for instance, in verbal music,—that which in man is unchanging and eternal, is a task as difficult as it is noble. Yet it can be done; it has been done: in epic by Homer and by Milton; in drama, by Shakespeare, and Æschylus, and Sophocles.

But to seize these universal and eternal human characteristics and express them in prose fiction,—in a form, that is, which, to be a vital form at all, must at the same time reflect the accidental and prosaic physiognomy of an accidental and prosaic phase of social life,—requires a combination of opposite and warring forces such as it is difficult to conceive existing in the same mind; for they are the forces of the poet and the forces of the prose man. To find an instinctive apprehension of the permanent accompanied by that shaping faculty which enables the artist to express it in some kind of artistic form, is what we might expect. But what we do not expect is to find a creature so anomalous as to have an equal appetite for kernels and for husks. This instinctive apprehension of the elemental, then, seems to be actually at war with that apprehension of accidental details, of the myriad commonplace trivialities of modern life, without a loving attention to which no novel has any chance in these times. And consciousness in the artist's mind of this enormous difficulty seems to be more fatal to the work than even unconscious ignoring of it, as we see in Balzac's case, whose intellectual exorbitations stand still amid the carefully catalogued accessories with which he has surrounded them. And, no doubt, this is why the man who has fed upon the "literature of power" which deals with the elemental, and also moved about in life, finds absolutely unreadable most of that vast mass of prose fiction which seems to be devoured as much by the secluded student in quest of pictures of the outer life he does not see, as by the unreading man of the world in quest of the psychological profundities, of which he hears that the book-world is so full. For, if the novelist shows any insight into those eternal and poetic passions of the human soul which Homer and Shakespeare dealt with, he is pretty sure to have—and on that very account, perhaps—such a

defective eye for all those countless lights and shades of prosaic English society that to a man who has mixed in it, in ever so small a degree, all illusion vanishes at the very first chapter. And if, on the other hand, he does possess the power of seizing and reproducing these prosaic lights and shades, his mind is mostly of that commonplace kind to which external forms are the all in all of life.

Yet this country has produced three novelists who at starting appeared to combine within themselves both these requisites—a profound instinctive insight into those great passions of the human heart left untouched by the "realists," with an eye for accessories as quick and sure as theirs. And they were all women—the women here so eloquently discussed. Besides the high endowment of sympathetic vision which removes Charlotte Brontë, Emily Brontë, and George Eliot so far above and so far beyond the mere society-novelists, whatsoever externalities they see, they can reproduce with a photographic accuracy equalling that of their prosaic rivals,—nay, surpassing them; for, in art, the difference between selection and cumulation of details is that between an ounce of duck shot and half an ounce of bullet. But, as if the fates were against the production of a great novel, Charlotte Brontë and Emily Brontë saw but little; and George Eliot—judging from her work,—during the whole of the brief plastic period of her life, must, if possible, have seen even less. For,—as we see in Dickens's case, more notably perhaps than in any other,—details, in order to be represented with that superlative vitality which we demand of genius, must have been stamped into the representer's mind in early youth; and, so short-lived is this youthful intensity of perception, that, whatever may have been a novelist's after vicissitudes, no one has ever yet been able to really and vitally reproduce in literature the tone of any form of society in which he did not move in his youth. And, with women, this primal plasticity of mind seems to pass away at an earlier age still. It is not surprising, therefore, that, with all their genius, the Brontë novels are nursery-governess-novels merely—that their pictures of life are but the records of the shy peepings of genius from the nursery window, and that George Eliot's novels are, as regards manner, so provincial in tone, that when she comes to even so much as talk about London society and what she calls "its refined irony,"—as she does in one of her stories—we cannot, while we stand amazed at her matchless powers, avoid a smile.

But dissimilar as are Charlotte Brontë, Emily Brontë, and George Eliot in so many respects, they are strongly affined in other ways than those we have been glancing at. One is in the very *vis matrix* which sets their plots aworking. Hesiod forestalled the whole of modern science when he told us that Strife is the moving principle of the world. It is the same in the novels whose proper *vis matrix* is the struggle of love against untoward circumstance. A novel, indeed, is a record in three volumes of how a certain "stream of true love" tried to "run smooth," and could not. But of this "true love" there are many kinds,—all but one of which had been worked to death by the novelists, long before Charlotte Brontë was born. She was clever enough to introduce into the English novel a new kind of love altogether—

a very surprising kind of love for a climate like this—magnetic affinity; a form of the love-passion which, let us say at once, is quite as unlike the "elective affinity" of the German sentimental school as it is unlike the mere animal appetite of the Greeks, the fantastic harlequinading of Provence, and the chivalry of mediæval Europe. We are sorry to say, however, that Charlotte stole it from France; everything in love, both as a fine art and as a passion, seems to be stolen from France, where, as George Sand says, "Love is woman's virtue." That Charlotte Brontë brought over this species of "true love" from the Brussels school, every one suspected, before the publication of Mr. Wemyss Reid's book; now every one knows it. As far as we know, the species was introduced into France by the Abbé Prevot in 'Manon Lescaut.' That it came originally from the East, however, goes without saying,—its most perfect expression, perhaps, being in that famous Persian story of 'Yussuf and Zulahika,' where Potiphar's future wife (a Mauritanian princess) falls in love with Joseph in a dream, and goes to Egypt to seek him. Through what channels the idea reached Prevot it is not easy to guess; for, before 'Manon Lescaut,' the love passion of the story-teller had always been the result of either appetite or all-conquering beauty, romantic chivalry, or else love potions like that which Iseult administered to Tristrem. But with regard to Charlotte Brontë it is impossible to speculate here as to what impelled her to resort to magnetic affinity in 'Jane Eyre'; it might have been idiosyncrasy; it might have been that, having determined to make her heroine a plain woman, there seemed to her no other man-attractive power possible. And magnetic affinity is a fact; though it is felt far more by women than by men, unless, indeed, the men are of the feminine type, like Nathaniel Hawthorne, as he appears in the 'Blithedale Romance.' Hollingsworth's attraction of Zenobia in that story was purely magnetic.

The influence of Charlotte Brontë upon her sister was enormous. The magnetic affinity between Heathcliff and Catherine Earnshaw—though in one case the influence is a growth; in the other, a sudden shedding—is precisely that between Rochester and Jane. Indeed, Heathcliff is only Rochester done by a coarser, if even a more powerful, hand—Rochester brutalized and gone mad. And the enslavement of the heroine by ruffians such as these is only rendered tolerable to the reader by two redeeming considerations: first, though they enslave the heroine they are also enslaved by her in turn; and second, though they are ruffians, they at least are not "cads." But when George Eliot came to make use of magnetic affinity she was less happy. The enslavement of Maggie Tulliver by Stephen Guest is rendered intolerable; first, by the fact that he is the enslaving party merely, and secondly by the fact that he is a "cad" of the true British shoddy type—or rather he is a ruffian and a cad in one.

Mr. Swinburne's wrath is great on this point: we are not quite sure, however, that he is altogether fair to George Eliot.—

"The two first volumes have all the intensity and all the perfection of George Sand's best work, tempered by all the simple purity and interlarded with all the stainless pathos of Mrs. Gaskell's;

they carry such affluent weight of thought, and shine with such warm radiance of humour as invigorates and illuminates the work of no other famous woman; they have the fiery clarity of crystal or of lightning; they go near to prove a higher claim and attest a clearer right on the part of their author than that of George Sand herself to the crowning crown of praise conferred on her by the hand of a woman even greater and more glorious than either in her sovereign gift of lyric genius, to the salutation given as by an angel indeed from heaven, of 'large-brained woman and large-hearted man.' And the fuller and deeper tone of colour, combined with greater sharpness and precision of outline, may be allowed to excuse the apparent amount of obligation—though we may hardly see how this can be admitted to explain the remarkable reticence which reserves all acknowledgment and dissembles all consciousness of that sufficiently palpable and weighty and direct obligation—to Mrs. Gaskell's beautiful story of 'The Moorland Cottage'; in which not the identity of name alone, nor only their common singleness of heart and simplicity of spirit, must naturally recall the gentler memory of the less high-thoughted and high-reaching heroine to the warmest and the worthiest admirers of the later-born and loftier-minded Maggie; though the hardness and brutality of the baser brother through whom she suffers be the outcome in manhood as in childhood of mere greedy instinct and vulgar egotism, while the full eventual efflorescence of the same gracious qualities in Tom Tulliver is tracked with incomparable skill and unquestionable certitude of touch to the far other root of sharp narrow self-devotion and honest harsh self-reliance. 'So far, all honour,' as Phraxonor says of Joseph in the noble poem of Mr. Wells. But what shall any one say of the upshot? If we are really to take it on trust, to confront it as a contingent or conceivable possibility, resting our reluctant faith on the authority of so great a female writer, that a woman of Maggie Tulliver's kind can be moved to any sense but that of bitter disgust and sickening disdain by a thing—I will not write, a man—of Stephen Guest's; if we are to accept as truth and fact, however astonishing and revolting, so shameful an avowal, so vile a revelation as this; in that ugly and lamentable case, our only remark, as our only comfort, must be that now at least the last word of realism has surely been spoken, the last abyss of cynicism has surely been sounded and laid bare. The three master cynics of French romance are eclipsed and distanced and extinguished, passed over and run down, and snuffed out on their own boards. To the rosy innocence of Laclos, to the cordial optimism of Stendhal, to the trustful tenderness of Mérimée, no such degradation of female character seems ever to have suggested itself as imaginable. Iago never flung such an imputation on all womanhood; Madame de Merteuil would never have believed it. For a higher view, and a more cheering aspect of the sex, we must turn back to these gentler teachers, these more flattering painters of our own; we must take up 'La Double Méprise'—or 'Le Rouge et le Noir'—or 'Les Liaisons Dangereuses.'—But I for one am not prepared or willing to embrace a belief so much too degrading and depressing for the conception of those pure and childlike souls. My faith will not digest at once the first two volumes and the third volume of 'The Mill on the Floss'; my conscience or credulity has not gorge enough for such a gulp. Whatever capacity for belief is in me I find here impaled once more as on the horns of that old divine's dilemma between the irreconcilable attributes of goodness and omnipotence in the supposed Creator of suffering and of sin. If the one quality be predicable, the other quality cannot be predicable of the same subject. As between *κοινή* and *ποινή*, we must choose. Lady Percy on the lap of Falstaff, bidding him patch up his old body for heaven; Miranda nestling in the arms of Trinculo; Virgilia seeking consolation for her husband's exile in the rival devotion of Brutus and Sicinius; Desdemona finding refuge from her

troubles on the bosom of Roderigo—could no longer pretend to be the widow of Hotspur, the bride of Ferdinand, the wife of the noblest Roman, the fellow-martyr of the nobler Moor. No higher tribute can be claimed, and no deeper condemnation can be incurred by perverse or intermittent genius than is conveyed or implied in such comparisons as these. The hideous transformation by which Maggie is debased—were it but for an hour—into the willing or yielding companion of Stephen's flight would probably and deservedly have been resented as a brutal and vulgar outrage on the part of a male novelist. But the man never lived, I do believe, who could have done such a thing as this: as the man, I should suppose, does not exist who could make for the first time the acquaintance of Mr. Stephen Guest with no incipient sense of a twitching in his fingers and a tingling in his toes at the notion of any contact between Maggie Tulliver and a cur so far beneath the chance of promotion to the notice of his horse-whip, or elevation to the level of his boot. Here, then, is the patent flaw, here too plainly is the flagrant blemish, which defaces and degrades the very crown and flower of George Eliot's wonderful and most noble work; no rent or splash on the raiment, no speck or scar on the skin of it, but a cancer in the very bosom, a gangrene in the very flesh. It is a radical and mortal plague-spot, corrosive and incurable; in the apt and accurate phrase of Rabelais, 'an enormous solution of continuity.' The book is not the same before it and after. No washing or trimming, no pruning or purging, could eradicate or efface it; it could only be removable by amputation and remediable by cauterization. It is even a worse offence against ethics, a more grievous insult to the moral sentiment or sense, because more deliberate and elaborate, than the two actual and unpardonable sins of Shakespeare: the menace of unnatural marriage between Oliver and Celia, and again between Isabella and her 'old fantastical duke of dark corners.' Scandalous and injurious as these vile suggestions are, they are yet but as hasty blots dropped by an impatient hand, as crude excrescences which may be pared and leave no scar, as broken hints of a bad dream which the waking memory may be fain and able to forget, to shake off it and be clean again; retaining no thought of Rosalind's cousin but as she first came into the forest of Arden, of Claudio's sister but as she first was enrolled among the votarists of St. Clare."

"These be strong words," undoubtedly. But perhaps, after all, the novelist perfectly knew what she was about, and intended to give an illustration of the sharp saying sometimes attributed to Thackeray, that "no woman could ever really distinguish a cad from a gentleman."

Mr. Swinburne tries to draw the line between genius and talent; from which we learn that it is possible to be a man of genius without being able to say what a man of genius is.—

"Such wealth and depth of thoughtful and fruitful humour, of vital and various intelligence, no woman has ever shown—no woman perhaps has ever shown a tithe of it. In knowledge, in culture, perhaps in capacity for knowledge and for culture, Charlotte Brontë was no more comparable to George Eliot than George Eliot is comparable to Charlotte Brontë in purity of passion, in depth and ardour of feeling, in spiritual force and fervour of forthright inspiration. It would be rather a rough and sweeping than a loose or inaccurate division which should define the one as a type of genius distinguished from intellect, the other of intellect as opposed to genius. But it would, as I venture to think, be little or nothing more or less than accurate to recognize in George Eliot a type of intelligence vivified and coloured by a vein of genius, in Charlotte Brontë a type of genius directed and moulded by the touch of intelligence. No better test of this distinction could be desired than a comparison of their respective shortcomings or failures. These will

serve, by their difference in kind and import, in quality and in weight, to show the depth and width of the great gulf between pure genius and pure intellect; even better than a comparison of their highest merits and achievements."

This, of course, is very acutely put. Yet we do not feel quite confident that entire justice has been done to the great writer with whom Charlotte Brontë is here contrasted, and consequently to the class of writers of whom she is the type.

Let us stay for a moment to see how the matter really stands. "All the world's a stage"; and there are two moods in which the play may be witnessed: the contemplative or philosophic mood, and the emotive or passionate. Sometimes, to be sure, the spectator's mind is so various as to know both these moods alternately; but then it has to be the mind of a Cervantes, say, or a Scott. And, sometimes, the spectator's mind is of a rarer order still; in these, like the lights in the 'Opal of Arden,' one mood is so blended with the other—contemplation is so "shot with passion"—or else "passion's fiery dyes" are so toned and softened in the "sweet amber light of philosophy," that a new mood is born richer than both these—iridescent and answering at the same moment like a prism to all the play that nature and the human heart can bring upon it; but then the spectator has to be a Shakspeare or a Goethe; and such as these are out of all classification.

For the most part, the spectators of the drama of life may be divided into the contemplative and the emotional. We say "spectators," for, though men cannot, of course, be actually divided into actors and spectators, yet, so indubitable is it that, while the majority of us prefer taking part in the play, others prefer looking on, that, *temperamentally*, we may be so divided; and imaginative literature—nay, *all* literature—is the record of the doings of the actors from the point of view of the pit and stalls. It is by instinct, then, and not by culture, that the contemplative spectator keeps his eye always upon the *motif* of the piece—seeks, in individual character, that which is typical, that which is normal, that which is in harmony with the plan of the human comedy as a general conception. His study is man, rather than men—human character, rather than human characters. In real life, you may know this kind of man at once; for his invariable comment upon any action or speech in life, or in an artistic rendering of life, is, "How true!" by which he means, not "how true" to this individual character, but "how true" to my conception of human nature!" So far, indeed, from taking interest in the merely odd, the merely odd is exactly that which he shrinks from, whether his temperament be humorous or serious. For if of a humorous turn, it is the whim of the entire conception and plan of human life that strikes him, not that of any departure from it. To him, normal human nature is far too droll to be burlesqued or caricatured with any profit or increase of fun. Cervantes was of these, so was Le Sage, Molière, Congreve, Vanburgh, Miss Edgeworth, Miss Austen, Miss Brunton, Charles de Bernard, Thackeray. This is the kind of temperament which, in the humorous line, produces Don Quixote, the Archbishop of Grenada, Tartuffe, Bobadil, Lady Wishfort, Lord Foppington, Lord Glenhorne, Mانتريville, Parson Adams, Emma, Amelia, Mrs.

Poyser; in the tragic line, Hamlet, Othello, Desdemona, Faust, Marguerite, Maggie Tulliver.

The emotional spectator, on the other hand, takes no heed whatever of the *motif* of the piece. For the *motif* of a piece is a philosophical idea, and a philosophical idea is precisely that of which he has no conception. The normal, the typical, is, to him, not interesting at all but common-place. The exceptional, the eccentric, is his quest. This kind of man, too, may be known at once in real life; for, his criticism upon any dramatic trait is: "That's just like him"; by which he means that it is very unlike anybody else but the exceptional character criticized; anecdotes illustrating the eccentricities of personal character are to him of a perennial interest. This is the kind of temperament that in the humorous line produces Quilp, Micawber, Newman Noggs, and the like, and, in the serious line, Rochester, Shirley, Paul Emanuel Heathcliff.

The type of the one class of artists is George Eliot—that of the other, Charlotte Brontë. Mr. Swinburne is far too acute a critic to complain that one is not the other; but he seems to credit the emotive spectator with genius and to deny it to the contemplative.

To say that great contemplative power and great ratiocinative power are not commonly found running alongside of great perceptive power is no doubt right; but to say that they are incompatible would be to say that, because Goethe wrote an excellent treatise on the Morphology of the Plants, the prison scene in 'Faust' is not a work of genius—that because Coleridge wrote an excellent treatise on Method in the 'Encyclopedia Metropolitana,' 'Christabel' is not a work of genius—that because Poe had more analytical power than any American of his time, 'The Raven' and 'Ullalume' are not works of genius. The fact is that very great activity of the mere intellectual machine may in certain cases exist alongside of that exceptional activity of perception which seems to do the work of genius. And, that George Eliot is one of these no one can doubt who reads 'Silas Marner' and 'The Mill on the Floss,' or indeed who reads that eloquent tribute from Mr. Swinburne himself when he speaks of her humour and her power of painting childhood.

The quality of talent, he says, is constructive—the quality of genius is creative. In the conventional use of the word "creative" this is of course true enough, but when we come to ask what is a constructed character as distinguished from a created one, and are told that Maggie Tulliver is constructed, that is to say, has no vitality, we perceive that the definition wants amending.

In different ways, they are all three women of genius: Emily Brontë being perhaps the rarest, if the narrowest of all. She was a true "Child of the Open Air"; her communings with nature were closer than even Charlotte's,—closer, perhaps, than those of any English-woman who ever expressed herself in literature.

There has certainly been nothing so good as this study ever written on the Brontës. The late W. Caldwell Roscoe's fine essay was, like all his critical works, deeper and more searching than that of most of his contemporaries, but between Mr. Swinburne and these great writers there is a profound sympathy. And,

as a piece of critical analysis it must be placed very high.

Calendar of Letters, Despatches, and State Papers relating to the Negotiations between England and Spain, preserved in the Archives at Simancas and Elsewhere. Vol. III. Part II. Henry the Eighth, 1527-9. Edited by Pascual de Gayangos. Published by the Authority of the Lords Commissioners of Her Majesty's Treasury, under the Direction of the Master of the Rolls. (Longmans & Co.)

THE papers described in this volume cover a period of two years and four months. It was the editor's hope, he tells us, to have included three months more, so as to have brought the matter down to the date of the peace of Cambray; but, owing to "the already immoderate size of the volume, and the mass of letters and documents still to be abstracted and calendared," he thought it advisable to break off earlier. When an editor expressly admits that one of his volumes is immoderate in bulk, it is superfluous to comment upon the fact; but the public have some right to inquire whether there be any real justification of its enormous size. Large books may be tolerated, in spite of the old saying, when the contents are of genuine importance and could not have been further condensed; but it is another thing, especially with books printed at the public expense, if twice or three times as much stationery is consumed as was really necessary for the end in view.

We are sorry to raise any objection of this sort to the work of a competent scholar like Don Pascual de Gayangos; but it certainly seems to us that he has not altogether apprehended what was required of him. He was commissioned to catalogue papers relating to negotiations between England and Spain. The English Government was his employer, and the elucidation of English history was the object; but Don Pascual's enthusiasm has led him astray. He has catalogued, and at quite superfluous length, the negotiations between Spain and a good many other countries as well, where the interests of England were but in the smallest degree concerned, and where the allusions to English affairs are often quite unimportant. Indeed, it is no exaggeration to say that turning open the volume at haphazard the probabilities are rather against any mention of England being met with in the page at all; but of Lantree's movements in Italy, of the musters of Italian foot and Spanish horse, of news about Milan and Naples and Venice and Hungary, there will be found notices in abundance. There are long letters to Charles the Fifth from Rome, before Henry the Eighth's divorce was talked about; also from other parts of Italy to the Spanish Court, and from the Spanish Court to the King of Hungary, all about the Emperor's own affairs, and not really about England at all. If Don Pascual had received instructions to calendar the whole Archives of Simancas, there would have been nothing to object; but even the title-page of his book leads us to expect merely "papers relating to the negotiations between England and Spain."

Moreover, it would seem as if much of this matter were translated rather than epitomized. The fulness with which the contents of the documents are expressed in the Calendar may

be judged by the fact that a letter often occupies nearly, or quite, as many printed pages in what professes to be an abstract as there are written pages in the original. Now it is true that the skilful penmen of old times generally economized paper by writing very closely; but a page of print in royal octavo might surely be expected, on the average, to contain the substance of at least two or three pages of the original MS. In one case, indeed (No. 8), a document which extends to twenty pages in the original occupies nearly twenty-one in print; but this is really a despatch from the Imperial Ambassador in England, and it was right to give the substance pretty fully. But what are we to say to despatches like Nos. 289, 292, 294, 307, 315, and 334, in all which there is absolutely nothing about England at all, except one very brief sentence in the second, showing that the English ambassador's credit was very good, and that he had not borrowed so much as was expected! Yet the first of these documents, which is six pages long in the original, occupies nearly five pages of the Calendar; the second, which is eight pages in the original, is reduced to $2\frac{1}{2}$; the third, $2\frac{1}{2}$ pages in the original, occupies nearly two; the fourth, five pages in the original, occupies six; the fifth, three pages in the original, is just the same in print; while the sixth, which is two pages in the original, fills rather more than two in what ought to be the briefest possible summary. But perhaps a better evidence still of the unnecessary length to which Don Pascual's abstracts run, is to be seen in No. 195, where the contents of the letter of Wolsey and the Cardinals at Compiegne to Pope Clement, during his imprisonment in 1527, are set forth in three full pages. The Spanish translation from which it is taken extends only to $2\frac{1}{2}$ pages. The original document is printed in Le Grand, and Mr. Brewer has got an abstract of it in his Calendar, containing the whole substance in thirteen lines! Indeed, sometimes there is a scorn of condensation which is almost ostentatious. Addresses, the form of which is merely conventional, are copied minutely, or translated, as for example, "To the Sacred, Imperial, and Catholic Majesty of the Emperor and King, our Lord." The salutation in a papal brief, which is equally a matter of course, is transcribed at full length:—"Charissime in Christo fili noster, salutem et Apostolicam benedictionem." The commencement of a letter from the Emperor to Brian Tuke, "My dear and very good friend," is translated, although the very same interesting expression appears in the address, which is given in full at the end. How many individual lines, amounting to pages in the whole volume, have been wasted in this manner, it would be difficult to say.

But leaving the manner of the book we gladly proceed to the matter. Here there is certainly abundance enough of new material, even within the proper scope of the work; and we think if Don Pascual himself had felt as much interest in the English as in the European policy of Charles the Fifth, he would not have swamped it with a multitude of irrelevant papers, which after all, for the subjects to which they relate, must require still further elucidation from the yet uncatalogued documents at Simancas. No doubt, during the two years to which the papers in

this volume belong very great events were stirring the Continent. There was the sack of Rome by the Imperial troops. There was the Pope's imprisonment and escape to Orvieto. There was the struggle of the Emperor's brother, Ferdinand, as King of Hungary against the Turks and his rival the Waywode. There was the defiance of the Emperor by Francis I. The last subject, indeed, could not have been overlooked in this Calendar, as the declaration of war was made by France in close conjunction with England. But the material, after all, in which there is a real connected interest, is furnished by the despatches of Mendoza, the Imperial ambassador in England.

The history of Henry the Eighth's divorce, so far as the matter had proceeded down to the fall of Wolsey, has lately received such ample illustration in Mr. Brewer's Calendar that additional light on the very same period was scarcely to be looked for. But foreign archives, of course, supply another view of the same subjects treated of in our own; and the information contained in Spanish despatches to England, which appears in Mr. Brewer's Calendar, is here supplemented by the reports of the Imperial agent to his own court. Indeed, it is only from foreign Archives that we can hope to learn, in many cases, what was really doing in England itself; for that which it was highly dangerous for an Englishman to put on record was very often communicated in cipher by an ambassador and was better known at foreign courts than people suspected at home.

Inigo de Mendoza, Bishop of Burgos, was despatched by the Emperor on a mission to England in 1526, the original object of which was to interrupt the too great cordiality then growing up, to His Majesty's disadvantage, between the French and English courts. He was arrested on his way through France, and detained a prisoner for four months; but, being at length set at liberty, reached England at the end of the year. His arrest he believed to have been connived at by Wolsey, and probably he was not far wrong in his opinion. In England he made little progress. The King was more intractable than the Cardinal, and it was evident that very important negotiations were going on with France. A great French embassy arrived in London, and the marriage of Francis the First with the Emperor's sister Eleanor seemed likely to be set aside for one with the Princess Mary. Then Wolsey went to France in great pomp, on pretence, no doubt, of cementing the general peace which was then in treaty, but really with very different designs. In short, the English court, while still professing perfect friendship for Charles and a desire to promote the peace of Europe generally, was evidently alienated from the Emperor in heart, and was trying every means to restore the balance of power, which had been disturbed in the first instance by the battle of Pavia, and was now still more so when the Imperial troops held Rome and the Holy Father at their mercy.

Henry the Eighth had legitimate grounds for some degree of coolness towards the Emperor. The very material assistance Charles had received from England in his wars had never led him to treat English interests with the smallest consideration. He had failed in many of his engagements, and would have post-

poned to the Greek Calends even the payment of his money debts. Wolsey quite understood his selfishness, and had devised an appropriate remedy. Unhappily a personal matter of the King's got mixed up with this question of national policy, and it was one in which the King's aim was altogether unjustifiable. The contents of these Spanish despatches entirely corroborate the view taken by Mr. Brewer as to Wolsey having been in the divorce question a most unwilling agent. Mendoza was certainly not the person to give the Cardinal a better character than he deserved; but Mendoza distinctly states it as his belief that Wolsey was trying hard to counterplot the King and to do secretly all that he dared to do in the Queen's favour. His first idea was to get rid of the matter by a council of lawyers and canonists, whose united opinions would have compelled Henry to desist from his intention. "There are, however," adds the ambassador, "some courtiers who think that, should the Legate perceive that the King is not likely to be moved from his purpose, he will turn round and take up the Lady's (Anne Boleyn's) cause rather than oppose the King's wishes." And so, in fact, it proved. Instead of putting a pressure upon Henry, Henry put a pressure upon Wolsey which he had not the moral courage to withstand. "The King had gone beyond him," and he knew it.

It is true, when Mendoza first heard of the design, he supposed that the Cardinal was promoting it; but his knowledge at that time was very imperfect. He had then been nearly five months in England, during which period he seems only to have been allowed one interview with the Queen, and that interview, though the day for it had been arranged beforehand, was unceremoniously cut short by the Cardinal, in whose presence it took place, on the pretence that the King had matters of importance to communicate to the ambassador which would require long conference. The suspicion that the King desired the divorce with a view to a marriage with Anne Boleyn did not occur to him till two or three months later; but the fact that a divorce was in contemplation was known to him in the middle of May, 1527. On the 22nd of June it was formally intimated to the Queen herself that the King considered that they had been hitherto living in mortal sin, and that he meant to put her away. The matter was then notorious, though the King sought still to keep it secret, for he was afraid public indignation would not allow him to proceed. People believed such an iniquity could not be tolerated, and some, like Fox, Bishop of Winchester (Mr. Gayangos wrongly supplies in brackets the name of the astute canonist Gardiner, who was the King's principal agent in the divorce, and who was not Bishop of Winchester for more than four years later), suggested, in their simplicity, imagining the King's scruples might possibly be real, that the Pope could remedy all defects in the original brief by some new act of spiritual authority.

The news of what the King intended was conveyed to the Emperor by a special messenger, with credentials from the Queen herself. Charles was seriously alarmed and distressed at the disgrace which it was sought to inflict upon his aunt. Hoping that the matter might still be kept a secret, he sat down, and, without consulting any of his

councillors, wrote, first, a letter to the King of England, and, secondly, a long letter of instructions to his ambassador, which he, with infinite pains, put into cipher with his own hand. But time went on, and the scandal became greater. After Wolsey had gone to France, it was believed that the King's aim was to marry Anne Boleyn, an object of which Wolsey himself was probably ignorant, and which he certainly did not at first encourage. Charles made desperate efforts to win over the Cardinal, offered him immediate payment of the long arrears of pensions on Spanish bishoprics he had years ago conferred upon him, promised faithfully the most perfect provision should be made for future punctuality, and offered him a further pension of 6,000 ducats till a bishopric of the value should fall vacant. But even if Wolsey could have been influenced by bribes like these, the bad faith shown by the Emperor in the past would have warned him against accepting them. Instead of serving Charles's purpose they rather helped to defeat it. For it was at all times, and now more than ever, a matter of life and death with the Cardinal to have the complete confidence of his master, and he was only too glad to reveal to Henry the offers that had been made him as a proof of his integrity.

Want of space forbids us to follow these new revelations further; but the light they shed upon the progress of the cause before the legatine court in England is very considerable. One single point may be mentioned to show their value and the danger of writing on historical subjects in these days before archives have been thoroughly explored. In an able article on Henry the Eighth's divorce in the January number of the *Quarterly Review*, it was rather strongly suggested that the brief said to have been found in Spain confirmatory of the original bull of dispensation was really, what the English professed to believe it to be, a mere forgery. In addition to other suspicious circumstances which were set forth at the time (as it was of course the King's object to discredit it as much as possible), the *Quarterly Reviewer* thought it very strange that the document, after a while, ceased to be talked about, and he considered that the purpose for which it was brought forward was sufficiently answered by the delay which it occasioned in bringing the cause to trial. But here we have Mendoza's confidential correspondence with the Emperor about this same brief; and not only does there appear to have been the most complete confidence in its authenticity, but it is recorded that on the 3rd of April, 1529, the document itself was shown at their request to the English ambassadors in Spain, who were invited to examine it for themselves, and have a copy made for them if they desired it. The offer was declined by the ambassadors on the plea that the question of the authenticity of the document had been referred to Rome, the Pope having, indeed, been urged, on many plausible pretexts, to pronounce it a forgery, without having examined it himself!

Evidence like this, we should think, must put an end to all reasonable doubt on the subject hereafter.

The Holy Bible, containing the Old and New Testaments, &c. Edited with various Renderings and Readings from the best Authorities by T. K. Cheyne, M.A., S. R. Driver, M.A., R. L. Clarke, M.A., and Alfred Goodwin, M.A. (Eyre & Spottiswoode.)

THE object which the editors of this volume had in view is one highly laudable and important. It was to place the results of learned research and critical scholarship before the reader of the English Bible, so that he might form a tolerably correct opinion about the varieties of rendering and reading connected with that volume. By recording the renderings which sensibly affect the meaning of the originals, and the chief readings that differ from the received texts, they hoped to benefit the intelligent student of the Bible. The task involved extensive knowledge. Labour of no common order, minute investigation, a specific examination of details, were demanded. The work might have appalled most scholars, multifarious and toilsome as it was. But it has been accomplished in a portly volume. The mode in which it has been executed cannot be commended without qualification; yet the book is a useful contribution to the accomplishment of the purpose which its authors had before them. It contains a valuable collection of materials, and shows a fair acquaintance with the subjects examined. The scholarship displayed is considerable. As the first modern attempt of the kind, it deserves praise. The perusal of it, however, is accompanied by the consciousness that the editors spent too little time over their work. More years should have been devoted to its elaboration. It is good to a certain extent, but it might and should have been better. Doubtless the authors could have made it more complete and satisfactory had they been less hasty in publishing the fruit of their labours.

Much depends on the selection of commentators and translators whence the materials have been drawn. These should be judiciously separated, the excellent from the inferior, the valuable from the worthless. A high standard should be applied in making the line between them. Men of no authority should be discarded; and those whose critical ability is proved by their performances should alone be cited. Some principle, clearly defined in the minds of the editors, should have regulated their procedure. Here the work is deficient. In regard to the Old Testament we miss names that ought to have appeared, and meet with others of no weight whatever. Amid a goodly list of prominent scholars, there stand not a few of trifling account. The enumeration of good authorities is defective; that of bad ones is redundant. Thus, Zunz, Herzheimer, Philippson, Renan, are wanting; but we have Köhler, Kliefoth, Schultz, Zöckler, Reinke, Kay, Prof. Weir, Adam Clarke, Secker, &c. Instead of Von Lengerke on Daniel, are Pusey and Fuller; instead of Credner on Joel, Wünsche. Mr. Cook, the Rev. S. Clark, and Mr. Plumptre figure in the pages; Moses Stuart and Henderson are ignored. The excellent translation of the Old Testament made by three Jewish scholars and edited by Zunz, is not used; neither is Luther's. Hence the selection is arbitrary and peculiar, savouring somewhat of a narrow atmosphere. It needs both amendment and widening.

In giving different renderings of the text, the editors properly enumerate more than one, where any plausibility attaches to them. Yet their idea of what should be stated is sometimes curious. Why should translations notoriously incorrect be exhibited, even though they have the sanction of respectable names? Some degree of probability should regulate the selection. When renderings obviously erroneous are either followed by authorities or otherwise noted, the procedure is misleading. For example, the common rendering in Psalm xlv. 6, has seven names attached to it. In Psalm lxvii. 15, the erroneous rendering of Delitzsch, "that he (the poor) may live, and he (the King) will give to him," should not have been recorded.

Again, in many cases, the right rendering is not given. Thus in Haggai ii. 7, "the choice of all nations" is completely ignored, and another specified; in Isaiah xix. 18, "city of safety," which is the true meaning, is unnoticed. The text of Proverbs xxx. 15, with the improper supplement *crying*, is passed over; so that the two daughters of the horse-leech, *give, give*, are obscured.

Various renderings which ought to have been noticed are omitted. So in Job xi. 12, the probable translation which appears in Bunsen's 'Bibelwerk,' "But a foolish man is as little furnished with understanding as a wild ass is born anew a man" is absent. In Prov. xxii. 20, the reading is passed over, "I have written unto thee before." In Nehemiah xii. 39, Luther's rendering, "and to the gate of Ephraim and to the old gate," should have been given, especially as it is preferable to the two that are specified.

Still further, incorrect statements about readings appear. In Psalm xvi. 2, as an authority for the rendering "my goods are nothing beside, &c.," Ewald is given. This is misleading, for he translates, *mein Glück*, "my prosperity." Kamphausen is also strangely given for the version, "And unto the saints that are in the earth (have I said), these are the noble." His translation is different. In Prov. xxx. 1, for "even the prophecy," we have "of Massa," with Hitzig's name attached. But this is an imperfect, if not unfair, view of that critic's opinion, which alters the preceding word *Jakeh*, and, joining it on to *Massa*, brings out the sense, "of her who is obeyed in Massa."

The omissions are pretty frequent, but we forbear to heap up examples. No notice is taken of the epilogue to Ecclesiastes, which so many Jewish interpreters, and several Christian ones, assume to be the production of another than the Preacher himself, whether it consist of the last three or six verses. In 2 Chron. x. 14, where we read "my father made your yoke heavy," &c., the best MSS. have "I will make it heavy, &c.," which is omitted by the editors. The reading "I have said," in Psalm xvi. 2, is pronounced to be in twenty-two MSS., but it is in more. The number, as given by De Rossi, is twenty-four.

The remarks we have made in regard to the Old Testament apply in a less degree to the New. Here the editors have succeeded better. In the selection of commentators and translators there is, however, a similar want of discrimination between good and poor authors. Bishop Wordsworth and Archbishop Trenchard are regarded; but Riehm, Hilgenfeld

and Volkmar are omitted. Lange, Stier, and Mack figure, as was to be expected from their opinions; but the far better interpreters, Osiander, Philippi, Steiger, and others, have not been used. The versions of the New Testament by Bunsen, Weitzsicker, and the Dutch Synod, are disregarded.

In citing various readings Tischendorf has been most used, and rightly so. But omissions occur, that are inexplicable except on the ground of negligence. Thus, in John xvi. 16, "Because I go to the Father" is omitted from the text on sufficient evidence by Tischendorf. Yet no notice is taken of the words. In John viii. 34, "of sin" is left out by some authorities which Scholten follows; but the omission is ignored.

Several trifling remarks are chronicled which should have been omitted. Thus, "for my brethren," in Romans ix. 3, has the note, "on behalf of," &c., from Alford, the two being identical in sense. At John vii. 53—viii. 11, the editors print, "Scrivener thinks this passage may possibly be an addition made by St. John himself after this Gospel had already been published." Such absurd conjectures should be ignored. In speaking of the last twelve verses of St. Mark's Gospel, Griesbach ought not to have been passed over, since his criticism of them in his 'Commentarius Criticus,' as early as 1811, is excellent. Both the various reading and its translation "which," in 1 Timothy iii. 16, are unnoticed; though belonging to the Vulgate and the Douay versions. It is surely an oversight that the death of the lamented Conybeare is put in 1875.

Among various readings that should have been recorded we may mention the remarkable one in Matthew xxv. 41, "which my Father prepared," &c.; and that in Matthew xxvii. 16, 17, where *Jesus* is placed before the name *Barabbas*. Sometimes no various rendering is given where the received translation is wrong, as at Matthew xxvi. 15, "covenanted"; or Dean Alford's erroneous versions are faithfully recorded, as at Mark xv. 6, "at every feast"; or De Wette is cited for a rendering he rejected, as in Matthew xxvii. 65, "Ye have a watch."

It is matter of regret that the scholars who undertook the work before us should not have aimed at a higher standard and laboured more assiduously to reach it. Having done useful work, and shown acquaintance with the topics and literature belonging to it, more was expected from them than they have really accomplished. The curious appreciation of authorities, the undue exhibition of third-rate men, the exclusion of far abler ones, argue obliquity or prejudice. Yet the volume has much merit, and will prove serviceable to many, especially to students of theology and ordinary readers of the Bible. If it is neither sufficiently full nor accurate, it must not be discarded on that account. We trust it may lead to something better. In the mean time it has its place, possessing qualities of its own that commend it to the acceptance of the multitude. Could it be thoroughly relied upon we should heartily commend it.

Essentials of English Grammar, for the Use of Schools. By William Dwight Whitney. (H. S. King & Co.)

If a pupil-teacher, just blossoming into a certificated master, writes an English grammar to show that he has as respectable a knowledge of the subject as most of his class, a critic will not subject the production to too rigorous a scrutiny. We should not expect much under the circumstances, and should not grumble at getting no more than we expected. But when a writer of Prof. Whitney's high and deserved reputation announces a new grammar, the case is different. It is presumed that he has some new aspect of the subject to present, some fresh linguistic facts to produce, or some correction of current errors to enforce on our attention. His readers have at least a right to expect that the book shall not descend below the level that has already been reached by others, and that the author shall not reproduce inaccuracies and blunders which have been already corrected. After a careful examination of Prof. Whitney's 'Essentials of English Grammar,' we are compelled to say that our expectations have been disappointed. The work contains nothing new that is of the smallest importance, and what there is in it that is valuable has already been successfully dealt with by others; while, as regards both the subject-matter and the way in which it is treated, the work is marked by deficiencies which place it beneath many English grammars already in common use.

Prof. Whitney says

"he has endeavoured to put before the learner those matters which are of most essential consequence to him—those which will best serve him as preparation for further and deeper knowledge of his own language, for the study of other languages, and for that of language in general."

After this the reader will perhaps be astonished to learn that historical etymology is ignored. The book does not contain a single paragraph from which the learner could obtain even the most elementary information as to the nature and history of the changes which our language has undergone, and the relation of its constituent parts to each other. In no instance is he led to see how existing forms and constructions are to be explained by reference to earlier ones. He gets no information, for example, on the origin of such words as *children* or the superlatives in *-most*; no explanation of the *t* in *it* and *what*; no hint of the derivation of words like *which* and *such* and *ought*, or of the force of the syllable *-ther* in *either*, *other*, &c., and its relation to the syllable *-ter* in Greek and Latin; he hears nothing of the connexion between the verbal substantive in *-ing* and the old nouns in *-ung*, or of that of the participle in *-ing* with the older form in *-ende*; he is told nothing about *could*, except that it is *irregular*. Not a single link is given by which English may be connected with any other language, or modern English with any earlier forms. There is not so much as an attempt to classify the prefixes and suffixes by which derivatives are formed, into those of Teutonic and those of Latin origin. As to such matters as the change from the highly inflected Anglo-Saxon to the almost uninflected modern English, or the influence of the Norman Conquest on the production of this change, the author says nothing. We

beg pardon; we have the following statements:—

"The English-speaking people of England were conquered in the eleventh century by the Normans, a French-speaking people; and, by the mixture of the two, their speech also came to be somewhat mixed, so that a part of our English comes from Germany and another large part from France" (p. 1). "The oldest English that we know anything of, the English of the time of King Alfred and thereabouts (a thousand years ago), we generally call Anglo-Saxon, to distinguish it from that of later times; and there are other names, such as Old English, Early English, for the language of times between Alfred's and our own" (p. 2).

We should not have lost much if we had been without these also.

On the other hand, the learner who finds what he really wants so "conspicuous by its absence" will be told that "good" forms "better" and "best"; that "bad" forms "worse" and "worst"; that "they" is obtained by the process of declension from the singular "he, she, it," and will be introduced afresh to the exploded infinitive in *-ing*. This pretender to grammatical recognition has been so thoroughly disposed of by Dr. Morris (*Hist. Outlines*, ch. xiii.), that it really savours of effrontery to foist him again upon us without demonstration of his claims. To make matters worse, Prof. Whitney calls this form the "participial infinitive," because it has the same form as the present participle—a signification which the word "participial" cannot possibly convey.

Nor is Mr. Whitney's book stronger on the logical than it is on the etymological side. The author does not rise superior to the too common inability to discriminate between words and what words stand for. Thus we are told that the "subject" of a sentence "names the thing about which we make a declaration" (p. 9). The "subject" is, therefore, a word. But later (p. 100) we are told that, in the case of a transitive verb, "The action of the verb is fancifully said to pass over from the subject to an object." From all which we deduce the remarkable conclusion, that if we take such a sentence as "John kicked William," the action that takes place is the action not of the person John, but of the verb "kicked"; and that the action of this very lively part of speech passes over from the word "John" (which is the subject) to the person "William," who is the object of the action; unless, indeed, we are to understand that the word "John" kicked the word "William." We entirely agree with the author that such an account of the state of affairs is "fanciful."

Of course, the author would reply that he must be understood to have meant that the physical action of kicking passed from person to person, not from word to person or from word to word; to which we should rejoinder, that if that is what he meant, he had better have said so. In much the same fashion, we are told that "a preposition connects other words, showing the relation between them. It is a connecting word by which a noun or pronoun is made to limit some other word, or by which it is attached to that other word in a relation which the preposition defines" (p. 143). A similar account of the matter elsewhere (p. 17) is followed by the statement that, "Of most often shows possession; by

shows the relation of nearness, &c." We must conclude, therefore, that in "He sits by the wall," the word "wall" is attached to the word "sits" in the relation which the preposition defines, namely "nearness," or (in other words) that the word "wall" is near the word "sits." We should like to see by what logical contortions the author can wriggle out of this conclusion. Why could he not have said at once, and unambiguously, that prepositions define relations not between two words, but between the things signified by the words, that is, show the relations which things and their actions and attributes bear to other things? As the book before us shows a pretty close acquaintance with some English grammars in which such absurdities are corrected, we are driven to the conclusion that the author really does not appreciate the importance of the distinction which he thus ignores. If it is any consolation to him, there are plenty more in the same predicament.

We should have thought, too, that the distinction between sex and gender had been insisted on often enough to save us from being again told that neuter nouns "are of neither the one sex nor the other." And how, pray, is it, that "an adjective limits the meaning of a noun"? It may limit the range of its application, but that is quite a different matter. Why, again, should "odour" be a common noun, and "colour" an abstract noun? And why should Prof. Whitney class *for* with *and* and *but*, as a co-ordinating conjunction?

We are sorry to say that Mr. Whitney has a good many to keep him in countenance when he says that "the relative 'what' combines the office of antecedent and relative" (p. 77). The thing is simply impossible, because the functions of the relative and its antecedent are not merely different but incompatible. The words belong to different clauses, and as often as not are in different cases. The ordinary use of "what" is simply an instance of a common idiom, namely, the omission of some word essential to the construction, which we mentally supply without difficulty. While the antecedent is omitted sometimes before "who," and usually before *what* (as *das* is sometimes, but not so uniformly, omitted before *was* in German), the relative is often omitted after the antecedent. It is curious that it never occurs to the patrons of the "compound relative" that in such cases the antecedent ought, by parity of reasoning, to be called a "compound antecedent," uniting in itself the functions of the relative as well as its own. This whole subject is an unlucky one for Mr. Whitney. He does not see the difference between an interrogative and a relative with a suppressed antecedent. He gives as an illustration of the latter the sentence, "We well know *who* did it, and *whose* fault it was, and *whom* people blame for it, and *which* of them most deserves blame" (p. 77). This is too absurd. If we turn the above sentence into Latin, the necessity of saying "Omnes scimus quis id fecerit," and not "Omnes novimus eum qui id fecit," shows the real state of the case.

Prof. Whitney preserves the old theory about the subjunctive being the mood of *conditional* assertion; that is to say, that conditional statements are naturally and properly expressed by means of the subjunctive mood. The commonest idioms of English, German,

and Latin contradict this statement. There are some conditional assertions which are properly expressed by means of the subjunctive mood; others which are quite properly expressed by means of the indicative. The difference is, that in the latter the predication is made with reference to some actual event or state of things outside the mind or thought of the speaker; in the former it is dealt with only as a matter of subjective conception. Compare for instance, "If the prisoner *is* guilty, he *deserves* hanging," and "If the prisoner *were* guilty, he *would* deserve hanging." But there are still many who think that "if" and "wenn" and "si" have not done their duty, if they have not compelled the verb that follows them to be in the subjunctive mood, and who cannot distinguish between a *subjoined clause* and a *verb in the subjunctive mood*. The latest birth of this confusion is that curious and wonderful creature, the Indicative-Subjunctive, which was not long ago introduced to our notice. The fact that the tendency of English usage has been to disregard the rather fine distinction which exists between the two moods, and to use the indicative when the subjunctive would be more correct, does not affect the question. An indicative does not become a subjunctive by being carelessly used in its place.

A word of praise is due to Prof. Whitney's clear and simple style. When he understands a point he makes it as plain as it is possible to make it. Indeed, the author deals with a great number of extremely obvious and minute matters with a degree of elaboration altogether needless. A book of 252 pages can hardly be intended for mere children. To each chapter is appended a good selection of examples for exercise in parsing, and these, the author tells us, he has mostly taken from the "rich stores of citations" in Mätzner's great 'Thesaurus.'

Shakespeare: the Man and the Book; being a Collection of Occasional Papers on the Bard and his Writings. By C. M. Ingleby, M.A. LL.D. Part I. (Tribner & Co.)

So long as we are to accept conjectures concerning Shakspeare, of which we have abundance, in place of facts, of which we have few, we may be thankful when the task of supplying them is undertaken by such men as Dr. Ingleby. Out of the wide and generally barren tracts of Shakspearean comment the world has gleaned a small handful of solid grain. A few conjectures have found their way into accepted texts, and some sound and accurate conclusions have been established as to the manner of Shakspeare's workmanship and the sources of his plots. This result can only be considered trivial when it is contrasted with the labour that is spent upon its production. The mountains have given birth to a mouse, but the mouse, if we may connect two fables, has done something to set free a limb of the lion. Practically the task of sifting from the chaff of comment the grain of knowledge is left to the critics. Those who write criticisms upon Shakspeare are those who read criticisms. That each commentator knows what others have written is established by the fact that a large portion of his own contribution to the general fund consists of abuse of his predecessors or rivals. It is, of course, whimsical to see that difference of opinion,

upon a matter concerning which no absolute knowledge is obtainable, is as pregnant a source of heartburning as it has always been, and that Shakspeare is as good a subject to fight about as vestments or different manners of dispensing the Eucharist. Those sight-seers who have witnessed in an aquarium the constant "scrimmage" that goes on among the smaller fry of the ocean may form an idea of the general state of the world of commentators, each critic, like a hermit-crab with a shell that does not belong to him, protecting the more sensitive portions of his anatomy, and each bent with sedulous haste upon the task of attacking his neighbour and compelling him to withdraw from his shelter. The general reader, meanwhile, troubles himself nowise concerning these dissensions, and accepts those few facts which after incessant winnowing are accepted by editors. Thus must it always be. Not wholly uninteresting is the occupation of conjecture concerning disputed points. So profitless is it, however, a man must have unbounded leisure to follow it out or even to maintain an interest in it. Dr. Ingleby's first chapter deals with the manner in which the name of Shakspeare is to be spelt. He points out that it is spelt in different places in sixty-four different ways, and he adopts the form of Shakspeare, being supported in so doing by Mr. Halliwell, who is quite as good an authority as anybody else, and M. Victor Hugo, who is no authority at all. Mr. Furnivall thinks differently, and Dr. Ingleby is consequently puzzled by Mr. Furnivall. Being puzzled by error on the part of a rival is, perhaps, as mild a form of quarrel as can well obtain in literary discussion. It answers to what Touchstone calls the "retort courteous," and is far away from the "countercheck quarrelsome" or the "lie direct." It cannot, perhaps, be compared for venom with a well-known form of theological bickering, which consists in praying for your adversary. To show how uncertain is orthography—a fact that has seldom been disputed—Dr. Ingleby proves that Scandinavian correspondents of the Danish and Norwegian Consul at Ipswich spell the name of that town in fifty-seven different ways. This has no close connexion with Shakspeare, and can scarcely be held to prove more than that Dr. Ingleby has brought to bear upon the subject a rather varied erudition. We fail to see much logic in the manner in which Mr. Furnivall's heresies are confuted by means of an illustration concerning white balls drawn from a bag containing balls assumably of different colours. Even if the curious illustration Dr. Ingleby employs did prove anything, Dr. Ingleby is too old a disputant not to know that the value of a syllogism depends upon the first proposition, and it is in the first proposition an opponent will seek for an opportunity of joining issue. He is, indeed, a bungler in dispute who cannot draw a correct inference from premisses that are accorded.

In treating of the meaning of the surname of Shakspeare, Dr. Ingleby takes up an attitude of opposition more defiant than that he occupies with regard to Mr. Furnivall. Dr. Charnock's conjecture in *Notes and Queries* concerning the derivation of the name from Jacques-Pierre, he assumes to be an instance of "poking fun at us," and he and Dr. Mackay are linked together as paradoxers, the latter being so described on account of his letter in

the *Athenæum* of the 2nd of October, 1875. This is another step in quarrel, and may be accepted as the "quip modest." It is only in the case of such hardened offenders as Warburton, whose sins of omission and commission are grave enough that our author stoops to the "reply churlish." Lower than this he does not descend, a fact that speaks well for his moderation.

One certainty he assists in establishing is that the birthday of Shakspeare is not that usually supposed, namely, the 23rd of April. At the time when Shakspeare was born the New Style had not commenced to be observed in England, and the 23rd of April, 1564, supposing that to be the day of Shakspeare's birth, is, in fact, the 3rd of May, New Style, and corresponds to the 5th of May of the present time. As Catholic countries accepted the Gregorian Calendar from its first promulgation, and England did not adopt it until 1752, it follows that the supposed coincidence of the time of the death of Shakspeare and Cervantes is unfounded, the English dramatist having survived the Spaniard ten days. This has, however, been pointed out more than once.

In iconoclastic proceedings like these, an explorer such as Dr. Ingleby is able to be of service. It is different, however, in matters of reconstruction. Dr. Ingleby shows conclusively that the evidence on which we receive certain particulars concerning Shakspeare is practically valueless. This may well be. It is, perhaps, no undue obtrusion of self to mention that the writer of this notice having occasion, in his eight-and-twentieth year, to consult for the first time the registry of his birth, found that the name therein differed slightly from that his parents, both of whom were then alive, had told him he was entitled to bear. He has also found a difficulty in establishing the time of a death which took place in the May of the present year. Such observations are common enough. Six different dates have been assigned for the massacre at Glencoe, which was a subject of Parliamentary inquiry. It is scarcely worth while, accordingly, to disprove a set of assertions when there is nothing with which to replace them except suppositions which the next commentator will in turn show to be unfounded.

To the assumption that Lord Bacon wrote Shakspeare's plays Dr. Ingleby gives more attention than it deserves. It is, of course, amusing to see how much ingenuity is displayed in maintaining a proposition so futile. The idea is, however, unworthy of serious treatment. It is but justice to our author to say that he sums up very conclusively the evidence that Shakspeare was himself. Thus far we have dealt with the first portion of Dr. Ingleby's volume, itself a part only of a larger work. This he entitles "Shakspeare: the Man." In the second portion, "Shakspeare: the Book" he is on different ground. His first essay, "The Modern Prometheus," may be described as a rhapsody, in which we find our author taking his stand with Shakspeare "against the criticsasters and the detractors," which, after all, affords no especial proof of courage. Whatever may have been the fate of Shakspeare in his own days, he has had eulogy enough during recent years. No very formidable phalanx is that of his opponents. In order, indeed, to array an army against himself, for the purpose of defeating it, Dr.

Ingleby has to bring forth the ghost of poor George the Third calling Shakspeare's work poor stuff, and the still more spectral form of a "late noble lord" who, it appears, called the bard "Silly Billy." In the second chapter he gives his contribution to that vexed question of Hamlet's madness. Chapter the third of this portion, number nine of the book, deals with some conjectural emendations, while chapter the last is occupied with a line in one of the sonnets which Dr. Ingleby believes himself to have restored.

Taking the book as a whole, it is a pleasant addition to Shakspearean criticism, and may hope to enjoy a certain success before it is relegated to those back shelves of public libraries which form the limbo of controversialists. Dr. Ingleby thinks for himself and studies authorities, and is as careful as he is erudite. He writes like a scholar and a gentleman, and in so doing he sets an example worthy of imitation by others of his craft.

NOVELS OF THE WEEK.

Only a Love Story. By Iza Duffus Hardy. 3 vols. (Hurst & Blackett.)

Never Despair. By H. Richardson Clerk. (Remington.)

Touch not the Nettle. By Alec Fearon. (Samuel Tinsley.)

Against Her Will. By Annie L. Walker. 3 vols. (Same publisher.)

THE interest of 'Only a Love Story' lies in the fact of the heroine having two strings to her bow. She first becomes engaged to Felix Grey. Felix shows his worth by renouncing her when he believes, on what seems to him good evidence, that he is liable to the taint of hereditary insanity. This terrible cause of separation is acknowledged by the man with fortitude, though he is as much torn by the grief of parting as the simple girl who tries to combat his resolution. She never forgets him, though the vicarious interest his intimate friend possesses for her turns out to be the germ of a transfer of her allegiance. The process is not ill described, and the parties put in the most favourable light, but though the kind of divided or doubled affection which Calla makes room for is by no means unnatural, we cannot think it so heroic as it seems to our author; while the romantic attachment of Lusada for Felix, though likely to be insufficient to steel him against Calla's attractions, ought, we cannot but think, to have led him rather to shun the danger of something like vulgar rivalry. However, he nobly atones for this lapse of his fidelity, such as it is, and shows himself what he would have called "true grit," to use his filibustering vernacular. Whether he is a very possible character, and what was the nature of the pursuits in America which seem to have formed a curious compound of the vulgar swaggerer and the high-minded chevalier, are questions which the readers of this not uninteresting story will solve at pleasure.

'Never Despair' is a goody little story of how the parson's son married the squire's daughter. They are all very nice people, though Lady Norbury has, perhaps, a tendency to worldly scheming on her daughter's account. This is chastened by the illness of that young lady, and the curate is successful in his well-directed suit. Some people might call the book "suit-

able for Sunday reading." It is almost absolutely colourless as regards character or incident.

The nettle in Mr. Fearon's book is presumably a young lady who indulges in successive flirtations with an Eton schoolboy, the curate of her parish and her brother's tutor. The last-mentioned of her suitors is a freethinker, and in the course of moonlight walks unfolds his reasons for doubting whether the first chapter of Genesis can be accepted literally. The arguments made use of are old to the world at large, but new to his beloved, who confesses herself convinced. The parson, thereupon, is completely out of court; and the final blow is given when the young lady gives up teaching in the Sunday school. In despair he proposes, is rejected, gives up his curacy and retires to the Potteries. But his love is not to be smoke-dried; he is met again shortly, by appointment, in a wood, and repeats his offer, only to have it once more refused. He then goes home, and somewhat inconsequently cuts off his right hand and makes an abortive attempt to pluck out his right eye, with a Bible open before him at the fifth chapter of the gospel according to St. Matthew. It would surely have been more reasonable to have adopted the view that it was the young woman who had offended, and to have "cut" her. The schoolboy having reached man's estate, is found to be preferable to the enlightened tutor, who goes to the Antipodes in consequence. In the mean time the fickle schoolboy has become an artist, gone to Italy, and met somebody whom he prefers to his first love. So the nettle is in her turn stung, and becomes a hospital nurse.

'Against Her Will' is one of those books of which we think with that kind of pity which is totally different from contempt. As we read each page we are conscious that it is praiseworthy, and are only moved to self-reproach for the infirmity of our human nature which makes us find such uniform goodness a little dull. And then one is set thinking,—What purpose do such books serve? Ought we to resent their existence; or, accepting their existence as a fact, to be thankful that they are not bad? Just as in society the standard of morality is maintained by unobtrusive, commonplace people, so the average quality of novels is kept up by such books as the present, books which help to push up the level of commonplace rather than lower it. But it is depressing to think of the making of such books; the placid industry and the well-balanced qualities of mind which the writers must bring to their task. If they could only be turned to some more useful object, what might not such attainments perform? The writing of 'Against Her Will' resembles a great deal of other work done by women. We cannot but admire the application and energy which they display; but, looking merely at the result, we find nothing to admire at all. The labour is infinite, the work nothing. The story of 'Against Her Will' tells how a very well-regulated young lady becomes the possessor of a vast fortune, which circumstances oblige her to keep against her will; how, after offering it to the man who, in her opinion, ought to have received it, and having the offer decidedly refused, she at last induces him to take a part of it; and how eventually, after various obstacles get removed,

he declares his love, and comes in for the whole by marrying the generous heroine. Her character is perfectly straightforward and perfectly commonplace. She never has the least difficulty in seeing the right course to take. She has no perplexities and no temptations, and the troubles thrown in her way only serve to show the ease with which right can be made to triumph. Other characters who are bad, or have foibles, are as clear as daylight; the reader is never left for a moment without a complete explanation of the little motives under which their every act is done, and the only conclusion to be drawn from the partial success of the bad people in imposing upon the good is that perfect goodness is compatible with imperfect judgment—a truism in which it is difficult to take a very keen interest. Miss Walker's style is of a piece with the matter of her book; it is on the whole correct and commonplace, with a tendency to become didactic or to descend into minute and irrelevant details.

OUR LIBRARY TABLE.

MESSRS. SMITH, ELDER & Co. send us an excellent translation of the *Brigadier Frederic*, of MM. Eckmann-Chatrian, by the Rev. F. A. Malleson, who has translated most of these authors' works.

THE third and fourth volumes of the Clarendon Press edition of the *Scholia on the Iliad* will be a welcome gift to serious students of Homer, though from the nature of their contents they cannot be considered as of equal interest and value with their predecessors. We have now for the first time an accurate and trustworthy account of the body of Scholia in the MS. known as Ven. B., so rich in extracts from the lost parts of the 'Homeric Questions' of Porphyry. The materials which form this body of Scholia are separable into classes, and may be distinguished by their position in the page of the MS.; it is the special feature of this new edition (as compared with Bekker's) that this distinction is here preserved with the greatest care by the use of marks and other devices. The excellent fac-simile prefixed gives the student a clearer idea of the general arrangement of the materials in the MS. than any verbal description can be expected to do. The credit for the solid work which these volumes represent seems to be almost entirely due to Prof. Cobet, of Leiden, and Mr. D. B. Monro, of Oxford, who have collated the MS. anew for this edition; as for the contributions of the editor himself, they consist principally in the occasional insertion of corrections either from other MSS. or from the suggestions of certain well-known Homeric scholars; so that we must assume that any remarks he has to make are reserved for the promised volume of Annotations. When the present undertaking is finished by the publication on the same scale and plan of the more important of the remaining sets of Scholia (if properly selected excerpts are not sufficient) we shall have appliances for the study of Homer such as we have for no other ancient author; and the work will be an enduring monument of the zeal of the Delegates of the Oxford Press for the interests and advancement of classical learning.

WE have on our table *French Verbs*, by L. A. Albigés (Griffith & Farran),—*Ideofone*; or, *Sound-Picture the True Character of Speech*, by A. Castle Cleary (Pitman),—*Guide to Chaucer and Spenser*, by F. G. Fleay (Collins),—*Proceedings of the Musical Association, 1876-77* (Chappell),—*Majolica and Fayence*, by A. Beckwith (New York, Appleton & Co.),—*The Four Gospels in Greek, with a Lexicon*, by Rev. J. T. White, D.D. (Longmans),—*The Gospels Harmonized and Arranged in Short Readings*, by Rev. E. Fowle (Bell),—*The Eternal Years*, by the Hon. Mrs. A. Montgomery (Burns & Oates),—*Jesus of Nazareth neither Baptized nor Slain by Jew or Gentile*, by Rev. G. Bartle,

D.D. D.C.L. (Formby, Bartle),—*Addresses and Sermons*, by A. P. Stanley, D.D. (Macmillan),—*Helps to Worship*, compiled by Two Priests (Mowbray),—*Analecta Norroena*, edited by Th. Möbius (Leipzig, Hinrichs),—*Die Aethiopische Uebersetzung des Physiologus*, by F. Hommel (Leipzig, Hinrichs),—and *Lettres Royales et Lettres Missives Inédites*, by C. C. Casati (Paris, Didier & Co.). Also the following Pamphlets: *The Anglo-American Primer*, by E. B. Burnz (New York, Burnz),—*The Observatory*, edited by W. H. M. Christie, M.A. (Taylor & Francis),—*Milton's L'Allegro*, edited with Notes, by F. Main, M.A. (Stanford),—*Memoir on the History of the Tooth-Relic of Ceylon*, by J. G. Da Cunha (Triibner),—*The Government of the Empire*, by W. Bousfield, M.A. (Stanford),—*The Apple*, by D. T. Fish (Country Office),—*Practical Dairy Farming*, by G. S. Witcombe (Bazaar),—*Stock and Share Investments*, by A. Sharwood (Bazaar),—*Fancy Mice*, by an Old Fancier (Bazaar),—*The Effects of Free Trade without Reciprocity*, by Capt. C. H. Thompson (Exeter, Eland),—*The Duties and Rights of Parish Priests*, by F. W. Puller, B.A. (Rivingtons),—*Shall we seek Reconciliation with the Roman Bishop?* (Burns & Oates),—*De Foderis Notione Jeremiana*, by H. Guthe (Leipzig, Hinrichs),—*Deutsche Revue*, edited by R. Fleischer (Berlin, Habel),—*Congrès International des Américanistes* (Luxembourg, Joris),—and *Die Acten des Paulus und der Thecla*, by Dr. C. Schlau (Leipzig).

LIST OF NEW BOOKS.

- Theology.*
Newman's (J. H.) *Via Media of the Anglican Church*, Vol. 1, cr. 8vo. 6/ cl.
Plain Preaching for a Year, 2nd series, edit. by Rev. E. Fowle, Vol. 1, 12mo. 5/ cl.
Poetry.
Ione, a Poem, by Author of 'Shadows of Coming Events,' 5/ Poets' Year, a Birthday Register, 18mo. 2/ cl.
Tennyson's (A.) Queen Mary, Cabinet Edition, 12mo. 2/6 cl.
Fine Art.
Viollet-le-Duc's (E.) *Lectures on Architecture*, translated by B. Bucknall, Vol. 1, roy. 8vo. 31/6 hf. bd.
Philosophy.
Hime's (M. C.) *An Introduction to Logic*, 12mo. 1/6 cl.
History and Biography.
Ewing's (Alexander) *Bishop of Argyll, Memoir of*, by A. J. Ross, 8vo. 20/ cl.
Luther's (Martin) *The Prophet of Germany*, by Rev. J. S. Banks, 12mo. 2/ cl.
Tucker (Mrs. Jane), *Memoir of*, by Mrs. G. F. White, 2/6 cl.
Geography.
Mackay's (Rev. A.) *Physiography and Physical Geography*, 1/6
Philology.
Leigh's (Lieut.-Col. E.) *Glossary of Words used in the Dialect of Cheshire*, cr. 8vo. 10/6 cl.
Science.
Byrne's (O.) *Geometry of Compasses*, cr. 8vo. 3/6 cl.
Helwig's (H.) *Tactical Examples*, Vol. 1, translated by Col. Sir L. Graham, 8vo. 15/ cl.
Reynolds's (M.) *Locomotive Engine Driving*, cr. 8vo. 4/6 cl.
Wright's (H. E.) *Handbook for Young Brewers*, cr. 8vo. 3/6 cl.
General Literature.
Banks's (Mrs. G. L.) *Glory*, 3 vols, cr. 8vo. 31/6 cl.
Edgeworth's (M. P.) *Pollen*, 8vo. 7/6 cl.
Eckmann-Chatrian's *Brigadier Frederic*, 12mo. 2/ bds.
Girls' Home Book, edited by Mrs. Valentine, cr. 8vo. 2/6 cl.
House Manager (Title), by an old Housekeeper, 12mo. 3/6 cl. swd. (Weale's Series).
Jennings's (P.) *The English Lakes, with Photos*, 4to. 21/ cl.
Le Sage's *Adventures of Gil Blas*, 12mo. 1/6 swd.
Minister's Chart of Autumn and Winter Fashions, 1877-8, 12/6
Peyton's (B. M.) *Magic Rose*, 12mo. 1/6 cl.
Riddell's (Mrs. J. H.) *Her Mother's Darling*, cr. 8vo. 6/ cl.
Routledge's *Every Boy's Annual for 1878*, roy. 8vo. 6/ cl.
Swinburne's (A. C.) *A Note on Charlotte Brontë*, cr. 8vo. 6/ cl.
Von Scheffel's (J. V.) *The Trumpeter of Sickingen*, translated by Mrs. F. Brunnock, cr. 8vo. 7/6 cl.
Wilford's (F.) *In the Backwoods*, 18mo. 2/ cl.

'SERVETUS AND CALVIN.'

Barnes, Aug. 23, 1877.

THE question of the Circulation has not, as I conceive from his letter in your last number, been so accurately understood by Mr. Weldon as seems desirable. Had he looked further into the matter, he would no more have ascribed its discovery to Rabelais than made me speak as if I had given it to Servetus. William Harvey was the discoverer of the motion of the blood in a great circle throughout the body, from the heart as the impelling power to the arteries, from the arteries to the veins, and from the veins back to the heart. The discovery of Servetus had reference to the true way in which the blood, from the right side of the heart, reaches

the left by passing through the lungs, and there acquiring the florid colour which distinguishes it from that of the veins.

The great fact first announced by Servetus, however, remained unknown to Rabelais, and all who followed him, for more than a century after the physiological genius of his age had fallen a victim to the bigotry and intolerance of Calvin and his contemporaries. The truth lay hidden in the 'Christianismi Restitutio,' printed, though never published, in 1553. It was only divined anew and independently, in so far as we know, by Realduo Columbus in 1574; and the world was first made aware of what Servetus had done though the publication of the passage in which he describes the pulmonary transit, by the Rev. William Wotton, in his 'Discourse of Learning, Ancient and Modern,' in the year 1694.

At no time in the history of medical science would anatomists appear to have thought of the blood as otherwise than in motion; but it was of a to and fro kind, and distinct in each of the two orders of vessels disclosed by the scalpel: from the veins, held to take their rise in the liver, to all parts of the body, for purposes of growth and nutrition; from the arteries, believed to have their source in the heart, and to be charged with heat and spirit for ends of maintenance and vital endowment. The liver thus conceived of as the laboratory of the venous blood—the blood proper, the heart as the laboratory of the spirituous blood, a supply of material from the common source was necessarily required for elaboration by the left ventricle of the heart into the subtle vitalizing fluid; and this, from the days of Galen to those of Servetus, was presumed to reach its destination by passing through the septum, or partition between the right and left ventricles. But Servetus, seeing that the septum was really solid, and could permit of little or no permeation, whilst there was a great open vessel sent from the right ventricle to the lungs, inferred that the copious flow of blood it transmitted could not be meant for their nourishment only; it must be for another and highly important purpose. Now, had not God breathed the breath of life into the nostrils of man, when he became a living soul, and must not the blood—the life according to the Scriptures—be brought into the most intimate possible contact with the life-giving air? "For it is in the lungs, not in the heart," says Servetus, "that the mixture of the inspired air with the blood takes place, and that the crimson colour and fiery potency are acquired."

The distinguished creator of Pantagruel and Gargantua appears from what is said in the passage quoted by Mr. Weldon, to have had no other ideas on the motions of the blood than those familiar to anatomists from the days of Galen down to those of Servetus and Harvey. Mr. Weldon's reference to Rabelais, nevertheless, is interesting, and is made, as I believe, for the first time in our literature.

In my work, entitled 'Servetus and Calvin,' I have come under a kind of engagement to do what in me lies to vindicate the memory and the honour of the great and upright Harvey from the aspersions cast on him both by Italian and German writers when they attempt to rob him of that which, by original and indefeasible right, belongs to him—the discovery of the general circulation of the blood.

ROBERT WILLIS.

August 27th, 1877.

It is now rather late in the day to dispute Harvey's originality as the discoverer of the circulation. The passage which Mr. Weldon quotes from Rabelais is mere nonsense from beginning to end. Panurge is made to say that the blood is sent from the heart by the right ventricle, and so, through the veins, to every part of the body; that the left ventricle distributes a more subtle kind of blood, and sends it everywhere to mix with the blood conveyed by the veins. The auricles and the lungs are altogether ignored; and how the blood is brought back again to the heart is not mentioned at all.

J. DIXON.

Literary Gossip.

MAJOR VON DER GOLTZ's defence of M. Gambetta's dictatorship in 1870-71 is being translated into French, and will be published in the autumn by Sandoz & Fischbacher.

DR. GEORG EBERS, the well-known Egyptologist, who has drawn upon his old-world lore for the subject-matter of more than one good novel, is now at work on another story of the same kind. His last, 'Uarda,' is already approaching a fifth edition.

THE next number of the *Revue Historique* will contain a review of Mr. Freeman's 'Norman Conquest.'

MRS. LYNN LINTON has written a story called 'Misericordia' for the October number of the *New Quarterly*. Mrs. Lynn Linton is still in Italy.

HERR SERVAA'S VAN ROOIJEN, of Utrecht, wishes for copies of all papers in which mention is made of Mr. Motley.

WE hear, with regret, of the death of Prof. Henry Rogers, who was at one time principal of the Lancashire Independent College at Manchester. Mr. Rogers was a contributor to the *Edinburgh Review* and other periodicals, and wrote various works, chiefly of a theological tendency, amongst the best known of which is 'The Eclipse of Faith: a Visit to a Religious Septic.'

MESSRS. CASSELL'S list, which will be issued on Monday, promises us, as a gift-book, 'The British Isles,' containing twenty-six steel-plate engravings from original drawings by Birket Foster and others, and 400 original illustrations, with descriptive letter-press, by Mr. Oscar Browning and others; also the new 'New Testament Commentary,' edited by the Bishop of Gloucester, the first three Gospels being treated by the Rev. E. H. Plumptre, D.D.; also 'The Great Painters of Christendom, from Cimabue to Wilkie,' by John Forbes-Robertson, illustrated with engravings of masterpieces; also a 'Practical Dictionary of Mechanics,' containing 15,000 drawings of machinery; also 'A Dictionary of English Literature,' by W. Davenport Adams; also new editions of Col. Baker's 'Turkey,' Mr. Mackenzie Wallace's 'Russia' (the sixth), and Capt. Burnaby's 'Ride to Khiva' (cheap); also several new children's books.

'TEN OF THEM; OR, THE CHILDREN OF DANEHURST,' is the title of a new book by Mrs. R. M. Bray, a title which describes the number of children in the family whose holiday doings are chronicled. Messrs. Griffith & Farran will issue it.

MESSRS. GRIFFITH & FARRAN will publish in the early winter season a humorous book about children, illustrated by J. Proctor, and entitled 'Those Unlucky Twins.' It is a story of the doings of two mischievous children.

THE death is announced of Mrs. Bagster, the widow of Mr. Samuel Bagster, the originator of the well-known house of Samuel Bagster & Sons, Paternoster Row, publishers of the Polyglot Bible and many important books in Hebrew, Greek, Chaldean, and other languages. The deceased lady had attained the age of one hundred years all but a day. Mrs. Bagster, until a very recent period, retained an interest in the firm of Samuel Bagster & Sons, which is now composed of two of her grandsons.

MR. WILLIAM DOBSON, of Preston, proposes to issue a third series of his 'Rambles by the Ribble,' which will contain a map showing the entire course of the river. The second series is just published. A considerable portion of it is devoted to the history of Whalley Abbey and the adjacent district. Stonyhurst College and the antiquities of Ribchester have also received much attention from Mr. Dobson.

PROF. SHELDON AMOS, of the University of London, has written for the September-October number of the *International Review* an article on 'Modern Armies and Modes of Warfare as bearing on Peace.' The article, suggested by affairs in Eastern Europe, is an exhaustive survey of recent military movements and organizations, including the modes of recruiting for the army, the size of armies in peace and war, the organization and internal constitution of modern armies, modes and instruments of warfare, and gives all requisite information as to the armies of the principal countries of Europe.

DR. MACGOWAN, the well-known medical missionary in China, has recently published a pamphlet in Chinese, entitled 'Kew neik sze yen too peen,' or 'Directions for Resuscitating the apparently Drowned, and for Recovering those Poisoned with Opium.' As the river populations are very large, and boat-accidents proportionately frequent, this pamphlet, if widely circulated, is likely to prove useful, especially when it is remembered that, as stated by Dr. Macgowan in his Preface, the method of procedure for recovering the apparently drowned, as given in the Chinese official Medical Jurisprudence, is, like that which was formerly in vogue in the West, only calculated to extinguish the last spark of life.

THE annual Conference of German and Austrian journalists has been held this year at Dresden, under the presidency of Dr. Stein, of the *Breslauer Zeitung*, and lasted from the 18th to the 20th of August. Besides routine work, several resolutions were adopted, recommending to the Imperial Legislature amelioration in the treatment of persons condemned to imprisonment for press and political offences, and respecting provision for old age and life assurances in connexion with journalism. After information had been afforded as to the growth of press associations in Germany and Austria, the meeting was adjourned until next year, when it will be resumed at Frankfurt-am-Main.

MESSRS. SMITH, ELDER & Co. have in hand the first volume of an extensive 'History of the Church of England, from the Abolition of the Roman Jurisdiction,' by the Rev. Canon Dixon, of Carlisle.

THE *West London Observer*, said to be the oldest local paper in London, has been purchased, and will, in future, be conducted by Mr. Alfred Wilcox, manager of the *Figaro*.

THE publication of Fritz Reuter's complete works in twenty-eight parts will commence on the 20th of September. Hinstorff, of Hannover, will be the publisher.

THE *Polybiblion* announces the discovery of a MS., which appears to be the first French Dictionary of pseudonyms. The author is Father Louis Jacob de Saint Charles, known by his 'Traité des plus belles Bibliothèques du Monde,' Paris, 1644, 8vo. The title of the

MS., until now unknown to bibliographers, is 'Bibliotheca personata seu catalogus librorum cuiuscumque Facultatis, Eruditionis et linguarum; quorum Auctorum nomina vel mutantur, vel invertuntur, vel falso Supponuntur.' Cosme de Villiers de Saint Etienne, in his 'Bibliotheca Carmelitana' (1752, 2 vols. fol.), had, however, mentioned this MS. which, in his time, was kept in the library of his convent, in Paris. Father Jacob, it appears, had his information from the authors themselves, or from members of their families. If published, this MS. will, no doubt, be a valuable addition to our knowledge of bibliography anterior to the seventeenth century.

M. OTTO LORENZ continues in Paris his publication of the 'Catalogue Général de la Librairie Française depuis 1840.' The last fascicule, just issued, comprehends the works published from 1866 to 1875, beginning with the letter "I" down to the syllable "NA." It contains no less than 320 pages gr. 8vo. in double columns. Many of the pseudonyms not included in the 'Supercheries Littéraires' of Quérard are there revealed.

THE Report of the University of Sydney for the year 1876, presented to the Parliament of the Colony, contains in an Appendix a financial statement, which, in these days of University reorganization, is not without interest for us at home. It seems to have been found necessary to ask for additional grants, in order to bring up the academical income from endowment to 9,000*l.* a year, of which sum 5,000*l.* is required to give each of the five professors 1,000*l.* a year, while the remainder is to be set aside for the payment of Assistants to the Professors, with Lecturers in Law, Medicine, and English Literature, and for the expenses of laboratories, &c. It is urged that the increased endowment should be (like the original one) secured by Act of Parliament, and not depend on an annual vote. A special grant of 3,500*l.* is also asked for the purpose of building and fitting-up laboratories, a very modest sum when one thinks of the cost of such things here, but it must be remembered that at Sydney science is extremely practical in its aims, and does not expect to be housed in an architectural demonstration like the New Museum at Oxford. It is abundantly clear from the Report, not only that the University is doing excellent work of various kinds, but also that even with the increased endowment, the most rigid economy must be required to enable Sydney to fulfil the higher functions of a learned University.

A RECENT "program" of the Gelehrtenschule (or Classical side, as we should say) of the Johanneum at Hamburg deserves the attention of medical men, as well as schoolmasters, on account of the statistics contained in the report of Dr. L. Kotelmann on the eyesight of the pupils of that famous institution. Taking the school from end to end, Dr. Kotelmann examined 413 boys, and found a defect of vision of some sort in nearly 42 per cent. of the entire number. The prevailing form of the evil was, of course, short sight: in the lowest class the proportion of short-sighted boys was (to set aside decimals) 14 per cent., while, in the highest, it was as much as 61 per cent., or considerably more than half

the whole number of boys in the class. But when the facts are tabulated with direct reference to the ages of the boys examined, they assume a still more serious aspect; for it seems that, whereas between the ages of nine and ten, the short-sighted formed only 16 per cent., among the oldest pupils (those from 19 to 20) the proportion rose to 75 per cent. Though he thinks the evil to be in most instances hereditary, Dr. Kotelmann has a good deal to say as to the auxiliary causes at work, and makes a variety of practical suggestions on the subject of the lighting and other arrangements of class-rooms; he seems clear that the result must be to some extent due to the indifferent type and paper of so many German school-books.

DR. DREHER, the author of 'Darwinismus und seine Stellung zu den bestehenden philosophischen Systemen,' has just completed a great work on the Theory of Existence.

SCIENCE

BRITISH ASSOCIATION.

MATHEMATICAL AND PHYSICAL SCIENCE. (SECTION A.)

By far the most interesting subject which came before this Section was the telephone, which was explained by Mr. Preece in Section A, on Friday, and by the inventor himself, in Section G, on Tuesday, on which occasion the former Section was almost completely deserted. It was also the subject of the lecture to working-men, which was delivered by Mr. Preece on Saturday evening. The marvellous performances of this instrument have, in fact, redeemed the Plymouth Meeting from the tameness which characterized its proceedings generally.

Prof. Graham Bell, the inventor of the instrument, is the son of the late Mr. Melville Bell, formerly Professor of Elocution in the University of Edinburgh, and well known as the author of a system of writing called "visible speech," designed for representing all sounds that can be produced by the vocal organs. So successful was this invention that its author was in the habit of writing down, in his public exhibitions, not only foreign words, but imitations of the cries of animals given by members of the audience; and on the manuscript being laid before his son, who was called in from a place where he had been out of hearing, he read it all off correctly. Mr. Graham Bell was thus early led to devote his attention to the scientific analysis of spoken sounds; and the study of the Phonograph of M. Leon Scott, as constructed by Koenig,—an instrument in which a style attached to a membrane traces a curve upon smoked paper, and thus in a manner writes the sounds which have set the membrane in agitation—suggested to him a course of investigation which has by degrees conducted him to his present success. His investigations cannot yet be considered as anything like complete. The instrument has been completely revolutionized within the past year, and there are several forms of it, each seeming to possess special advantages for particular applications, but all coming under the following description. The voice of the speaker is directed upon a sheet of iron, which may have any thickness, from the thinnest possible up to a quarter of an inch. This plate is close in front of a pole of a magnet round which a great length of very fine copper wire is coiled, which is in electric communication with the telegraphic wire passing to the distant station to which the sound is to be conveyed. The iron plate by its sonorous vibrations (produced by the speaker's voice) induces currents in the coil—one current for each vibration—the strength of current varying with the strength of vibration. Thus the current

which is sent through the line wire represents by its changes of strength the changes of density produced in the air by the voice of the speaker. The receiving apparatus at the other end of the wire is (at least in some forms of the instrument) similar to the sending apparatus which we have above described. The currents as they arrive alter the strength of the magnet, and thus produce corresponding movements of the iron plate. This plate sets the air near it in vibration, and thus reproduces—more or less weakened and altered—the original sound.

This reads more like a sketch from the island of Laputa than sober earnest; but it simply describes an accomplished fact, which the members of the Association have had abundant opportunity of testing for themselves. We may add that Mr. Bell has won golden opinions by the unaffected simplicity of his demeanour and the absence of all pretentiousness.

One of the most important contributions to the Section was the summary given by Prof. Haughton of the results of the tidal observations made in the recent Arctic Expedition. The winter quarters of the Discovery proved to be a suitable locality for such observations, and a very complete series were taken, namely, an observation every hour for twenty-eight consecutive weeks, with exceedingly few omissions. These observations have been submitted, under Prof. Haughton's direction, to harmonic reduction; and the most interesting result is that, besides the two tides, one coming by way of Baffin's Bay, and the other by Behring's Straits, which were known to enter these seas, a third tide is found to be present. Each of these three tides has its own peculiar features. The Baffin's Bay tide is remarkable for the largeness of its diurnal component, the Behring's Straits tide has in like manner marks which render it unmistakable, and the third tide is distinguished by a feature which Prof. Haughton has never met with in any tide before, the largeness of the tertio-diurnal component—that is, the component whose period is eight hours. From the presence of this third tide Prof. Haughton draws the conclusion that Greenland is an island. Upon the whole, in the observations of the Discovery, the diurnal component had an amplitude of eight or nine inches, the semi-diurnal of fifty or fifty-four, and the tertio-diurnal of from four to six inches.

Among the communications made by Sir W. Thomson to the Section, perhaps the most important was that on the effect of transverse stress on the magnetic susceptibility of iron. It was known that a wire round which a current is sent by means of a helix, has its magnetization increased by applying a longitudinal pull. Sir William now finds that its magnetization would be diminished by applying a transverse pull. Such a pull cannot be directly applied to a wire, but the same end is attained indirectly by employing a gun-barrel instead of a wire, and subjecting it to strong hydrostatic pressure in its interior by means of water and a piston. Pressure so applied tends to increase the circumference of the barrel, and is thus equivalent to a circumferential pull. The effect is to render the barrel less susceptible to magnetization in the direction of its length.

Lord Rayleigh gave a valuable but somewhat technical paper describing experiments to determine the ultra-red limit of the prismatic spectrum. Prof. M'Leod gave the results of some very accurate measurements of the vibration-frequencies of Koenig's tuning-forks, by which they are completely vindicated from the charge of inaccuracy recently brought against them by Mr. Ellis. Mr. Stearn exhibited a new and apparently very convenient form of Sprengel's air-pump, the fall-tube being only a few inches in length; and several short papers were contributed by that industrious young physicist, Mr. S. P. Thompson, of University College, Bristol. The underground-temperature Report contained observations from India, and a very extensive series from Schemnitz, in Hungary; and, besides the regular Report on luminous meteors, there was a most sensational account

of an enormous meteorite or mass of meteorites which fell in India, in October, 1873.

The Section suspended its sitting on Saturday, on account of the attractive excursions which were fixed for that day; but it divided itself into two on Monday and Tuesday, and was thus enabled to complete a programme which was scarcely so extensive as usual.

CHEMISTRY. (SECTION B.)

'Unit of Light for Photometry,' by Mr. A. Vernon Harcourt, dealt with a very important question. No accepted scientific unit, nor even a sufficiently good practical unit for comparing different modes of illumination for the purpose of fixing bargains between gas companies and the public had yet been adopted. The unit at present adopted in Gas Acts was a sperm candle burning 120 grains of sperm per hour. One advantage of the adoption of this unit was that it was generally intelligible. The word "candle" might still be retained as the name of a unit of light, in the same way as the word "foot" was used as a unit of distance. But the fluctuations arising from uncertainty in the mode of burning and the varying character of candles were so great that nothing like a scientifically correct standard could result. Having described several methods adopted in Paris and other places to procure a better unit by the use of oils, he proceeded to describe his own. There were three conditions to be fulfilled for the production of a flame standard. First, the combustible must be of known definite composition; secondly, the conditions of burning must be of simple and definable character; thirdly, the nature of the combustible and of the condition of burning must be such that atmospheric changes might produce a minimum effect upon the light; and a fourth condition might be added as highly desirable, viz., that the operator should be able to verify for himself the composition of the combustible he employed. After trying many plans, he had hit upon a method which satisfied fairly the conditions he had named. For a standard combustible he used a mixture of air with that portion of American petroleum which distilled at 50° C. The mixture he employed to represent the light of one candle was 600 volumes of air to one volume of the liquid; or three volumes of air to one of the liquid when it became gas. Mr. Harcourt had erected on the platform an apparatus constructed for the employment of his gas in photometry. It consisted of a reservoir of gas, with necessary machinery for regulating the supply to his test burner. The test burner is a brass tube four inches long by one inch in diameter, the flame being emitted from an orifice $\frac{1}{4}$ inch in diameter. The burner was lit, and compared with the ordinary candle unit. Two of Mr. Harcourt's units burned one cubic foot of gas per hour. The light seemed to be a trifle duller than that of the candles, but for the purpose of a unit it was not requisite that the burner should be a good one for developing the illuminating power of the gas; only that it should be of such construction, and on such a simple scale, as to be readily produced and readily measured.

Mr. C. J. Kingzett read a paper 'On the Albumen of Commerce,' the gist of which was to show that the albumen of blood could be bleached to the extent of its being used as a substitute for albumen of egg in some manufacturing processes. The same author communicated a paper 'On some New Reactions in Chemistry,' and, in conjunction with Dr. B. H. Paul, a preliminary account on 'An Alkaloid obtained from Japanese Aconite.'

Prof. Odling brought several papers before the Section, the most interesting being that on 'Gallium.' This metal, youngest of all elements,* was discovered on the 27th of August, 1875, by Lecoq de Boisbaudran, in a zincblende from the mine of Pierrefitte, in the Pyrenees. The proportion of gallium in the ore amounted to one part in 100,000, and M. Lecoq de Boisbaudran had to

* The youngest perhaps is Davium; but as almost nothing is yet known of it, we must delay our belief in its existence.

employ half a ton of zinc before he got as much as twelve grains of metallic gallium. Gallium is of a greyish colour, something like lead, but not so blue. It, in fact, as regards colour, is more like pewter than any other metal. It tarnished slightly under exposure to the air; was not so soft as lead, but was capable of being bent, and cut with a knife. One of its most remarkable properties was that it could be heated to redness, when it assumed a very faint tarnish, without being converted into ash or scum. A more remarkable property was its extreme fusibility. It melted with the heat of the hand, and formed a globule of an extremely white colour, and would, if placed between two panes of glass, act like mercury by covering the surface, and affording a sort of mirror. A third remarkable property was its superfluidity. It melted at a temperature of 30° but, on being allowed to cool very considerably below this temperature it did not solidify. It was one of the lighter metals—its specific gravity, which had been determined with great exactitude by its discoverer, being 4.7. It is isolated from its ore in the following manner:—The blende is dissolved in aqua regia; the solution is treated with zinc until nearly all evolution of hydrogen ceases, and the clear liquid decanted from the precipitate which has formed, and which contains copper, lead, silver, cadmium, mercury, thallium, &c. The clear liquid is now boiled with an excess of zinc until no more precipitate forms. This precipitate, which contains aluminium, zinc, and gallium, is re-dissolved in muriatic acid, and the solution, after addition of some ammoniac acetate, is treated with hydric sulphide for the purpose of precipitating the aluminium. The filtrate is now treated with sodic carbonate, which is added gradually and in small quantities. The first portions of the precipitate will contain the gallium. Spectroscopic inspection reveals the point where nothing more of this metal appears in the precipitate. The gallium has now to be separated from the zinc, and this is done by dissolving the last precipitate in hydrochloric acid, and adding to the solution ammonia in excess, which throws down pure gallium oxide. This is now dissolved in potash, and subjected to electrolysis, when the gallium will appear at the negative electrode, coating the platinum, from which it is detached by bending the platinum under cold water.

There is an interesting theoretical speculation attached to gallium. Several years ago, Mendeleeff, of St. Petersburg, published a classification of all known chemical elements. He arranged them in such groups that he thought to be able to see certain relations in their atomic weights, which relations led him to predict the future discovery of certain elements. Among these elements, not yet discovered in 1869, was "ekaaluminium," occupying a position between aluminium and indium, just as zinc stands between magnesium and cadmium. The atomic weight was 68. As soon as gallium was discovered, Mendeleeff pointed out that it must be identical with his predicted ekaaluminium. But further study of gallium is required to establish the identity fully.

Mr. J. M. Thomson gave a brief Report on 'Double Compounds of Nickel and Cobalt.' It was found that a solution of the potassic sulphates of nickel and cobalt, when fractionally crystallized, yields a series of salts, the formulae of which have been determined and found to be somewhat complex in structure; they also possess different colours, and show the phenomenon of dichroism to a remarkable degree. These fractions were analyzed, and a regular replacement of the metals established. The crystals of the conjugated double salts are oblique prisms, having a tendency to modification when grown to a large size. The first fractions possess a greenish-grey colour, showing the preponderance of the nickel; the later fractions, however, become more crimson in colour as the potassio-cobalt sulphate preponderates over the nickel salt. Details of the analyses of the different fractions were given. The examination of the optical properties of these several fractions present some interesting details. The colours

shown through the different axes pass in a direct order down the spectrum in each case. In the first fractions the more highly refractive rays of the cobalt spectrum mingle with those of the nickel, whilst in the last the two rays are those adjacent to each other in the cobalt spectrum only. That these fractions have a more definite constitution than isomorphous mixtures is shown by the fact that large crystals taken for analysis exhibit throughout the same dichroism.

'On Peroxide of Hydrogen,' by Mr. T. Fairley, was a review of work done in connexion with this and other peroxides, and an account of careful experiments, chiefly directed to determine the heat of formation of the oxygen molecule. The interesting paper described also the preparation of various peroxides, principally by means of hydrogen peroxide; among new bodies obtained is a series of uranium compounds.

Dr. C. R. Alder Wright gave a summary of his researches on Aconitine. This alkaloid, and some others related to it, were prepared from *Aconitum ferox* and *A. Napellus*. The results obtained by the author and Mr. T. B. Groves, who investigated this subject some years ago, can be summarized in the following sentences:—

Aconitum Napellus roots, as met with in commerce, yield by appropriate means a highly active, well-crystallized alkaloid, aconitine, which is represented by the formula $C_{25}H_{45}NO_7$; the crystallized bodies obtained formerly by Groves (1860), and by Duquesnel (1871), consisted mainly of this base, but were not perfectly pure.

In one instance, roots purchased as *A. Napellus* yielded only a small quantity of aconitine, but a large amount of a nearly inert bitter base, *picroaconitine*, forming well-crystallized salts, was present. The preparations usually met with in pharmacy under the name of "aconitine," or "nitrate of aconitine," must necessarily contain this inert base whenever it was present in the roots employed; consequently such pharmaceutical preparations cannot be relied on as of uniform physiological potency.

Besides *aconitine* and *picroaconitine*, the roots of *A. Napellus* contain another alkaloid of lower molecular weight, and incapable of yielding crystalline salts or of crystallizing itself. Commercial "aconitine," when not crystallized, is liable to contain this substance as an impurity: thus the body examined by Von Planta appears to have almost wholly consisted of this amorphous, uncrystallizable substance, which is perhaps identical with or may contain the body "napelline," and other analogous substances described by other chemists.

The physiologically active crystallizable alkaloid of *A. Napellus* (*aconitine*) appears to be quite different from the crystallizable alkaloid of *A. ferox* (*pseudo-aconitine*), although the two are doubtless allied, and are similar in many of their properties. The inactive bitter base of *A. Napellus* (*picroaconitine*) is not identical with Broughton's "atisine," from *A. heterophyllum*.

The use of strong mineral acids and other reagents in the extraction of aconite alkaloids from the roots (as in the older processes) is likely to cause loss of crystallizable aconitine by alteration and decomposition; and to this cause is to be attributed the statement of chemists who have used such processes, that the alkaloid of *A. Napellus* is non-crystalline. It is not improbable that the "lycoctinine" and "acolyctine" of Hülschmann, from *A. lycoctonum*, are alteration-products thus formed. The tartaric acid process of Duquesnel is preferable; but as the first rough crystals of base thus produced are impure, and as it is difficult to separate the crystallized salts of aconitine and picroaconitine, it would be desirable to recrystallize the salts obtained by Duquesnel's method from ether, to convert the base-crystals into a salt, regenerate the alkaloid by soda carbonates, and finally crystallize again from ether. In this way a definite homogeneous substance, possessing the physiological powers of aconite root in a high degree, could be obtained.

Aconitine is excessively energetic, so much so as

to render working with it a matter of considerable pain and difficulty, unless very great care be taken in manipulation, and more especially in avoiding the inhaling of the dust of the crystals of the base or its salts. A minute fragment, too small to be seen, if accidentally blown into the eye, sets up the most painful irritation and lachrymation, lasting for hours; whilst similar particles, if inhaled, produce strong bronchial irritation or considerable catarrh, according to the part where they lodge.

The communications made to the Chemical Section this year were of a fair scientific value. We noticed an improvement in this direction for the last two or three years, which seems to point to a proper exercise of the selective authority of the Secretaries.

GEOLOGY. (SECTION C.)

THE nature and origin of mineral veins are questions of great interest in the geological history of Cornwall and Devon. Of the numerous points discussed by the geologists of to-day, by far the greatest number were almost unknown at the end of the last century. But the nature of metalliferous lodes, their courses and dislocations, the influence which the surrounding rock has upon their contents—all these are points which have been studied for centuries. Three papers on this subject were laid before the Section by Dr. C. Le Neve Foster, H.M. Inspector of Mines for the district, and Mr. W. W. Smyth made it the text of his evening lecture. Cornwall and West Devon consist of a series of slaty rocks, with some limestones, ranging generally nearly east and west. The exact age and correlation of these beds are questions to which we referred last week. Large masses of granite protrude through these rocks, and rise into lofty hills, of which the Dartmoor range is the most important. The old notion was that, around these granitic masses, the schists and slates were deposited; but this opinion is known to be erroneous. The granite was formed—or, at least, was brought into its present position—after the strata now surrounding it were laid down. In forcing its way through the slates the granite has greatly altered or metamorphosed them. The opinion that granite itself is but the extreme form of metamorphism to which the sedimentary rocks have been subjected is one which Mr. Smyth rejects—at least, as regards Cornwall. Sometimes the junction of the slate, or "killas," with the granite is sharp and clearly defined. As the granite breaks through and alters rocks of Carboniferous age, it is clearly more recent than this. We saw last week, from Mr. Pengelly's remarks, that the metamorphism is older than the Trias. The age of the granite is thus fixed within comparatively narrow limits as regards geological chronology.

Granite and killas are alike traversed by joints, fissures, and veins—all evidently of later age than the rocks they traverse. These lodes themselves are also of different ages. The oldest are those running east and west, and which contain tin and copper. Later than these, because interrupting them, are the "cross courses," which generally contain silver-lead, or iron. These run north and south. Later than all are some other east and west veins which intersect and dislocate all the others. Generally these newest veins contain only clay; but sometimes they contain silver-lead.

Tin ore occurs both in the granite and in the killas; but when in the latter, it is always within a mile or two of the granite. Sometimes it occurs in well-marked "lodes"—the ore, with other minerals, occupying a fissure cutting through the rocks. Sometimes it is distributed through the rock in thin strings, or "stockworks."

Dr. Foster described the stockworks of Cornwall, dividing them into three classes, according as they occur in killas, granite, or elvan; the last-named rock being a granitic and felsitic porphyry, which is related in composition and mode of origin to the granite, but which ranges across the country in dykes of varying width. In another paper, 'On the Great Flat Lode South of Redruth and Cam-

borne,' Dr. Foster advanced some interesting speculations as to the origin of many of the tin lodes. The vein in question runs sometimes at the junction of the killas and granite, sometimes entirely in the granite. At the sides of the lode, separating it from the granite, there is "capel," a rock containing little or no tin. There is no well-defined "wall," or plane of separation between the lode and the capel, or between the capel and the granite. All the appearances point to the conclusion that the lode and capel are merely altered granite. Many other mines give evidence in favour of the same opinion. The author contended that the typical tin-lode of Cornwall should no longer be represented as the mere contents of what was once an open fissure; and asserted that though fissures were necessary their principal function was not to serve as receptacles for the minerals, but to convey the fluids, which changed the granite and deposited the tin ore in little minor cracks and pores of the altered rock. The large tin-lodes are merely long stock-works, rather than ordinary mineral veins. A third paper, by the same author, referred to 'Some Tin Mines in the Parish of Wendron, Cornwall.' The tin-bearing rocks, in these cases, he believed to be altered granite.

Mr. J. H. Collins submitted a 'Note on the Serpentine of Duporth in St. Austell Bay, Cornwall.' An intrusive greenstone is converted into a porphyritic serpentine; and the author believes that this change has been effected by the agency of mineral solutions, acting through fissures from below.

'The Drift of Plymouth Hoe,' was the subject of another paper by Mr. Collins. The Hoe is a terrace-like flat on the seaward face of Plymouth, the underlying rock is limestone. Clays, gravels, &c., occur over the top of this flat, and are also let into the limestone in pipes or pockets. As a result of his investigation, the author concluded that the deposits here need be of no great age; he doubted their glacial origin, or that any of the beds now existing are raised beaches. It appeared in the course of the discussion, however, that an undoubted raised beach existed some years back near the Hoe, but this has almost entirely been removed in the process of quarrying or building.

The 'Post-glacial Deposits of West Lancashire' were described by Mr. C. E. De Rance. The peat and submerged forests of the coast are continuous with the peat of the Ribble Valley. They contain the remains of beech, a point of some importance to have now settled, as the statement has previously been supposed doubtful. The Ribble has excavated its valley in glacial drift, from 150 to 200 feet thick. The terraces in the valley are all of post-glacial age, though of far greater antiquity than the lowest flat, which is the partial equivalent of the peat of the plains.

The 'Committee on Underground Waters in the New Red Sandstone and Permian Formations' is doing good work, and an elaborate Report was read by the Secretary, Mr. C. E. De Rance—the Report being supplemented by an Appendix, read in full by Mr. T. M. Reade. These papers entered largely into the questions of water-level in wells, qualities of waters, and their influence on the health of the people, and many other important points involved in this inquiry. It is proposed to extend the examination to the Oolitic districts of England.

A boring for water, fruitless, or almost so, in the object sought for, but yielding good results of another kind, is that at Messrs. Meux's brewery, Tottenham Court Road, London. Some notes on this work were sent by Mr. R. Godwin-Austen. The boring went through Tertiary beds, Chalk, Gault, and some sands, probably representing the Lower Greensand, in which a little water was found. Below the sands there were highly inclined slaty beds, containing well-marked fossils, which Mr. Etheridge recognized as Devonian. Mr. Godwin-Austen, after describing the range of the Palæozoic rocks, so far as was previously known, proceeded to examine the fresh evidence yielded by the boring. The Devonian strata are there dipping about 30°, so that the Carboniferous Limestone, and

probably the Coal Measures, must soon follow. The direction in which the beds dip, and consequently the direction in which the higher strata must be sought for, is unknown. Mr. Godwin-Austen, however, gave reasons for believing that London lies just on the edge of a trough of Palæozoic rocks—probably on the southern edge of that trough, in which case the Coal Measures must be looked for further north. The Sub-Wealden Exploration has come to an end, and a new scheme is proposed, to be called the "Kentish Exploration"—the object of which will be to bore down to the Palæozoic rocks in one of the deep valleys of the Chalk in East Kent—probably near Ashford or Dover. The British Association, although not over rich this year, has voted 100*l.* in aid of the work.

The 'Thirteenth Report on Kent's Cavern' was read by Mr. Pengelly. It dealt chiefly with the work carried on during the past year in the "Bears Den." This part of the cavern was partly explored by MacEnery fifty years ago. His description is as follows: "The lower sheet of stalagmite exhibited a most curious appearance, being cracked over the whole area into large slabs, while the upper sheet was not in the least fractured. The average thickness of the cracked sheet was about two feet, and it possessed the hardness of rock." The lower stalagmite here described overlies the "breccia"; in the upper part of this breccia rough chert implements occur with the remains of animals; bears are most abundant, whilst the hyæna is absent. A narrow passage, called "the Tortuous Gallery," leads out of the southern end of the Bears Den; this, too, has been examined. Here, also, the breccia was the lowest bed, underlying stalagmite. The cracks in the lower stalagmitic floor present a little difficulty, as there is a possibility that remains of a later age may thus get mixed up with those of the older breccia.

Mr. R. H. Tiddeman read the 'Fifth Report on the Victoria Cave.' The work had been carried on up to July last, when it was stopped for want of funds. A great part of the time was devoted to exploring the older beds of the cavern, underlying the hyæna-bed; in these only the remains of the wolf has yet been found. The object of the work now in progress is to trace out the old bed of the river which first formed the cavern.

In the course of the discussion which followed the reading of these Cave Reports, the Rev. W. S. Symonds mentioned the discovery of the remains of the beaver in the caves of the Wye. He believed, with Mr. Tiddeman, that a glacier had blocked up the entrance to the cave after it had been inhabited by man. Professor Harkness inclined to the same opinion, but believed that the glacial period of the north of England lasted to a later period than it did in the south of England. Mr. Evans also referred to the question of pre-glacial or inter-glacial man; whilst looking forward to the time when the occurrence of man in pre-glacial times would be well established, he held that at present the point was by no means proved.

Mr. T. Plunkett gave a description of recent excavations in a cave in county Fermanagh, Ireland. This cave will now be systematically explored, aided by a grant from the Association.

High Teesdale has long been known for the wildness and beauty of its scenery, and for the interesting exposure of the basaltic rocks, known as the Whin Sill, which may there be examined. Although studied years ago by Sedgwick and Phillips, no rocks older than the Carboniferous were till recently believed to occur in Teesdale, but Phillips had noticed that under Falcon Clints there were rocks of a rather peculiar character. The recent work of the Geological Survey has shown that underlying the lowest Carboniferous rocks of Teesdale there are Silurian rocks traversed by dykes of mica trap. These beds have recently been described by Messrs. Gunn and Clough, and the former submitted to the Section some further notes on this interesting subject.

Mr. G. A. Lebour gave some 'Notes on the Age of the Cheviot Rocks.' The porphyrites of the Cheviots are known to rest upon tilted

Silurian rocks, and to be overlain by Carboniferous rocks; the lowest Carboniferous conglomerates in Northumberland being largely composed of porphyrite pebbles. This fixes the age of the great mass of the Cheviots; but Mr. Lebour described some rocks which he believed to give evidence of later date in the history of the range. Near the head of Redewater, a mile or two from the Scotch border, there are some vesicular dolerites piercing through the calciferous sandstone series. There are also some doleritic breccias occurring in patches, and consisting of fragments of porphyrite and Lower Carboniferous rocks embedded in a matrix of dolerite. These also must be post-Tuedian. We therefore have in the Cheviots rocks of probably Devonian, Tuedian and Berianic age, belonging to the same eruptive centre.

Another paper by the same author was 'On the occurrence of Pebbles in Shale in Westmoreland.' The pebbles are of quartzite, and occurred in a bed of carboniferous shale at Augill. Mr. Lebour asked for information as to the mode in which such pebbles could be transported. The subsequent speakers showed no lack in offering suggestions. The stomachs of fish and saurians, roots of trees, and ice, were amongst the agents mentioned.

As bearing on the questions in our notice of last week, we may note a paper 'On the Carboniferous Coast Line of North Cornwall,' by Mr. S. R. Pattison, which described the coast from Bude to Boscastle. The rocks are those described by Sedgwick and Murchison as Culm, or lower Coal Measures. The lowest Carboniferous rocks are those near the gorge of Fentagion; from below these the Devonian rocks arise.

Probably the greatest novelty brought before the Association was the description, by Mr. H. C. Sorby, of 'A New Method for Studying the Optical Characters of Minerals.' The telephone, though new to an English audience, has been for several months under discussion in scientific journals, but the points of Mr. Sorby's most recent discovery are, as yet, scarcely at all known. The method would scarcely be intelligible without the aid of drawings; it, however, furnishes us with a simple and accurate process for determining the system of crystallization to which a mineral belongs, and the direction in which a crystal is cut.

The 'Thermal Conductivity of Rocks' is being investigated by Prof. Herschel and Mr. Lebour. The fourth Report stated that the work done during the past year had consisted largely in verifying former results. The same apparatus was used as before, with the substitution of iridium-platinum for iron in the wire junctions of the thermopile. The best conductor yet tried is floor spar; quartz and quartzite come near it. Sand is the worst conductor, and dry clay is but little better. Clay with one-fourth of its weight of water becomes as good a conductor as altered shale, whilst sand with half its weight of water becomes nearly as good as quartzite.

Mr. G. H. Morton's paper 'On the Carboniferous Limestone and Millstone Grit near Llangollen,' gave interesting particulars as to the rapid thinning of the limestone in a south-easterly direction. The series has a thickness of 1,200 feet at Ty-nant, but at Fron it is reduced to 115 feet.

Mr. J. G. Jeffreys gave an account of some post-tertiary fossils procured in the late Arctic Expedition between lat. 82° and 83°. The fossils were found in mud-banks or raised sea-beds at heights varying from the sea level to 400 feet above it.

A note by Prof. Heer, 'On the Fossil Flora of the Arctic Regions,' was read by the Rev. W. S. Symonds. This also referred to the collections made by Captain Fielden and others near 82° N. lat. The plants included birch, hazel, elm, &c.

Mr. H. Woodward described a little crustacean (Branchipus or Chirocephalus) from the freshwater limestone at the base of the Bembridge series in the Isle of Wight; it is closely allied to the "brine-shrimp" (*Artemia Salina*) so abundant in

the brine-pans at Lymington at the present day.

The occurrence of salt water in coal has often been recorded. Sometimes, as in Durham, it probably results from infiltration from the sea, sometimes it is due to percolation downwards from triassic rocks containing salt; but at other times the fact cannot apparently be thus explained, and it has been suggested that the salt water is actually fossil sea-water of the Carboniferous period. Mr. W. Molyneux, in describing the salt water of the Ashby Coalfield took this view of the case, and recorded the existence of *Aviculopecten* and other marine shells in the Coal Measures of that area.

We do but mention some other papers submitted to the Section: these were the Rev. H. W. Croskey's Report 'On Erratic Blocks in England and Wales'; Mr. A. W. Waters 'On the Influence of the Distribution of Land and Water upon the shifting of the Axis of the Earth'; Prof. F. W. Clarke 'On the Mounds of Arkansas, U.S.'; Mr. A. F. Mott 'On the Source and Function of Carbon in the Earth's Crust'; and Dr. Phéné 'On Stalactites from the Island of Antiparos.'

The President called attention to the volume of the *Geological Record* for 1876, edited by Mr. Whitaker, which had just been published. The Association gives an annual grant in aid of this important work.

ANATOMY AND PHYSIOLOGY.

(SECTION D.)

PROF. HAUGHTON'S paper on the best possible number of limbs for terrestrial and aquatic animals attracted much notice. His reasonings were based on mathematical principles, and referred especially to ideal creatures, although many illustrations were drawn from actually existing animals. The three-limbed vertebrate was shown to be superior for stability and defence to any two- or one-legged form; but the four-limbed vertebrate had the great advantage of enjoying perfect stability on any three limbs, while the fourth became available for offence. There was no advantage in having five or more limbs, except in special circumstances: the cost of feeding an extra limb outweighed the advantage of having it. Man lost something by being two-legged, but gained far more by the possession of hands wielded by reason. Birds again surrendered two legs for higher uses. Vertebrates that lived both in air and water possessed both the four legs of terrestrial forms and the single one (tail) of aquatic vertebrates. The Professor commenced the consideration of aquatic animals by conceiving a circular animal with a complete circle of small limbs, in which locomotion was attained by ordering particular limbs to cease working. This animal would have a perfect power of translation represented by 2 F (F being the muscular force of the body), but no rotation. A two-limbed swimmer with a circular form could swim in the direction of either limb with 2 F, and at right angles with 2 F; but it also had a power of rotation. The three-limbed form, with a symmetrical situation of the limbs, would exert 3 F at each, and could swim with 2 F in six directions. The distinction between head and tail was then analyzed, and their possible mode of evolution indicated, the economical expenditure of force being the guiding principle. There was no economical advantage in an aquatic animal having a greater number of limbs than three; and the odd-limbed being always an advantage over the even-limbed, being able to travel in some directions with a smaller expenditure of force. As regards the principal force employed, the ordinary fish is really one-limbed, and goes forwards with a force of 4 F, but cannot go backwards with anything like that force. The one-limbed form had the advantage that it could put on its entire power in one direction, but it was not as economical of energy as the three-limbed.

The Rev. W. H. Dallinger gave an account of his researches into the life-history of the simplest organisms, describing the division of two into four

flagella in his calycine monad after fission of an adult, and contrasting the ungraceful and imperfect movements of the biflagellate form with the perfect ease and beauty of motion resulting immediately that the four flagella were formed. He referred to his determination of the transverse diameter of the flagellum of *Bacterium termo* as the two hundred and ten thousandth of an inch, and incidentally mentioned that he had kept *Paramecium* a long time in full vigour in Cohn's (inorganic) solution. All the life-histories he had examined showed a perfectly natural sequence and adaptation to conditions; Darwinian principles were fully justified from such researches. Recent experiments had proved that minute organisms could gradually have their nature so changed that from living in a medium with a temperature of 45° F., they flourished at 127°, while if transferred immediately from one temperature to another they were inevitably killed. There were various experiments also showing that it took a longer time to produce a modification in the ovum or germ than in the adult.

Prof. Allen Thomson called attention to a beautiful series of photographs of the minute distribution of blood-vessels in various parts of the animal body, made under the superintendence of Prof. Dantscher, of the University of Innsbruck, from his own preparations, and about to be published. Some of these are capable of being viewed under the stereoscope. They are to be exhibited at the meeting of German naturalists at Munich in September.—Prof. Rolleston gave an address on the arterial supply of various parts of the brain, in the course of which he supported the view that righthandedness is due to the better vascular supply of the left side of the brain. He believed also that the occipital lobe of the brain would gradually disappear in consequence of its deficient relative supply of blood.—Dr. W. H. Pearce's paper on the geography of consumption in Devonshire was based on statistics of deaths from consumption in ten years, 1861-70. It appeared that the wildest moorland districts had the lowest death-rates from this disease, Western Dartmoor 0.37 per 1,000, west of Exmoor 0.45, while the average of England and Wales was 2.47 per 1,000.—Mr. W. Thomson described a method of excluding germs from rooms used for surgical operations, consisting in the passage of filtered air continuously through the rooms. When the doors of the rooms were opened a current of this pure air would always pass outwards, preventing the entrance of germs.

Mr. Bettany read a paper on the use of the terms Assimilation and Metastasis in which he strongly urged the harmonization of animal and vegetable physiology by the use of terms in the same sense in both. This was especially needed, he considered, in the case of the word Assimilation, employed in England in botanical text-books to signify the manufacture of starch and other organic bodies in the green parts of plants. He advocated the application of the word Assimilation in regard to plants to the actual manufacture of new protoplasm, the making of new living substance out of that which was not living. In this he was supported by the author of the article on Assimilation in Baillon's new Botanical Dictionary. The term Metastasis, as used in Sachs (English edition), covered this true assimilation, as well as all other transformations of organic bodies in plants for transport from one part to another. It would be better to restrict it exclusively to these latter changes. In the discussion which followed, the indefinite and vague employment of many terms in physiology was acknowledged, though the method of remedying it was not so thoroughly agreed upon.

On the whole the Department, though not presenting such continuous attractions as at Glasgow, has maintained a high standard of merit, especially considering the hindrances to physiological work caused by the vivisection controversy.

ANTHROPOLOGY.

(SECTION D.)

Not a few of the papers read in the Anthropological Department bore upon that branch of the science which is still generally known under the older name of Ethnology. Race-questions are always popular, since they are commonly connected with questions of politics and religion. At the present time, the ethnology of the Balkan Peninsula is peculiarly interesting, and the Department therefore welcomed a paper 'On the Bulgarians,' by Dr. Beddoe, who has had the opportunity of personally studying their ethnic relations. These relations form a curious anthropological enigma, and Dr. Beddoe has followed Virchow and Kopernicki in seeking its solution. If the race-characters of a people could be determined at once from the language they speak, the problem would be easy enough, for it is well known that the Bulgarians speak a Slavonic tongue, with little or no Turanian admixture, except what may reasonably be supposed to have been introduced by the Osmanli Turks. Yet it by no means follows from this that the Bulgarians are of Slavonic blood. Indeed, as a matter of fact, their cranial characters differ extremely from those of Slavonic type. It is believed that the Bulgars were originally a tribe from the Volga region, having apparently much in common with the Huns and Avars. But the Huns and Avars are considered to be of Turkish or of Finnish blood. And yet the Bulgarian skull does not resemble the ordinary Finnish type, while it is still less like the ordinary Turkish type of cranium. It stands, in fact, alone, its affinities being most obscure and leading merely to conjecture as to the ethnic relations of its possessors. A Bulgarian cranium examined by Dr. Beddoe had a cylindrical form, and a moderate breadth (77), with a small frontal and a large occipital region, whilst the face was slightly prognathous. In a cast of a Bulgarian skull, the author was struck with the extremely deep nasal notch and the remarkable shape of the nasal bones, indicating a patulous nose tilted upwards to an extraordinary degree; but it is only fair to remark that this seems to have been an exceptional example. Assuming, however, that the skull first described is typical, Dr. Beddoe endeavoured to use it as a guide in tracing the racial affinities of the Bulgarians. As the cranial features are neither Slavonic nor Turkish, he falls back upon the Finns, and is led to conjecture that they may be of Ugrian type. Indeed, he believes the modern Bulgarians to be as much Ugrian as anything else. How this Ugrian people came to assume the language of the subject Slaves, over whom they once ruled in the Lower Danube, is explained by the author on Virchow's hypothesis, that when they received their religion from the Slavonic race, they became thoroughly welded with them, and allowed the Slave language to supplant their own.

From the Bulgarians to the Malayo-Polynesians is a wide step; but a paper on the latter people deserves early recognition as being the work of a man who has long laboured among the race whom he describes. The object of the paper was to show wherein the brown Malayo-Polynesians are superior to the black Negrito-Polynesians, with whom they are often associated. Among the black Polynesians the position of woman, for example, is worse than that of the dog, whose food she shares, whilst among the brown Polynesians she occupies a position but little inferior to that among ourselves. The author assumes that this brown race has descended from a higher intellectual level, and in support of this assumption points to their highly-developed system of hereditary ranks and titles, which he describes as being far above that of mere savagery; to their tenure of land by hereditary transmission; and to their myths and poems, which are said to present a good deal of beauty. In some of the islands all the principal historical legends exist in both a prose and a poetic shape, the former being the simpler,

but the latter the purer and more trustworthy. In fact, any attempt to modify the poetic language is easily detected, whilst the prose tends to become altered by transmission from one generation to another.

Who are the Zaparos, about whom a paper was read by Mr. A. Simson? The Zaparo Indians are a little-known people, inhabiting parts of Ecuador, and Mr. Simson is the only English traveller who has been through the heart of their country. They are expert woodmen and hunters, marvellously acute in eye and ear, able to travel by night through woods in unknown parts of their country, and making their way scatheless among thorny underwood, though naked and bare-footed. In diet they are rather particular, and refuse to eat tapir or peccary, lest they should acquire the heavy character of these animals, and thus lose their cat-like agility. When unprovoked they are very shy and harmless, but they resent any attempt at physical coercion, and are only to be managed by tact and good treatment. Unfortunately, they exhibit a marked satisfaction in the destruction of human life, and are not on the best of terms with the Napos, Jivaros, and other neighbouring Indians. They are extremely superstitious; and their language is described as being remarkably unpleasant and difficult of pronunciation.

Another ethnological paper, the result of personal observation, was one 'On the Natives of Socotra,' by Mr. Hunter, of Aden. Coming nearer home, we may refer to a communication 'On the Ethnology of West Cornwall,' by the Rev. Lach Szjerma, of Newlyn, who has lately been writing on the Cornish language in the *Revue Celtique*. A good deal in the paper was known to every student, but there were also some observations worth recording. He points out that the ancient Celtic clan-system still exists, the members of different clans associating but little, and rarely intermarrying with those of others. In discussing the vexed question about Jews in Cornwall, which Prof. Max Müller has so ably dealt with, the author suggests that the ancient Cornish Celt may have confused the Phœnician tin-traders with the Jews.

Pre-historic archaeology formed, as usual, a prominent feature in the proceedings of this department. Dr. John Evans called attention to the recent discovery of a great number of stone implements of paleolithic type in a gravel-pit near Axminster. They have been collected by Mr. D'Urban, the excellent curator of the Exeter Museum, where they are now exhibited. The material of which they are made is not flint, but a brown chert, probably derived from the Black-down beds. This stone is rather coarse in texture, and the implements are for the most part of a large flat ovoid type.

Col. Lane Fox, who is never so happy as when digging into a tumulus, described his recent exploration of a British barrow of the bronze age on Whitmore Common, near Guildford, which yielded three urns in coarse pottery, inverted over burnt bones. A neighbouring mound was examined, without much result. He has also opened six small tumuli on Merrow Down, near Guildford, and has been rewarded by finding burnt bones; and in one of them an iron Saxon knife, with the characteristic groove on the back, thus showing that this group of burials belongs to the Pagan-Saxon period, that is, to some time between the landing of Hengist and the preaching of Christianity by St. Augustine.

Dartmoor is rich in stone circles, hut-dwellings, stone avenues, and other pre-historic remains, some of which were visited during the Meeting, under the direction of Mr. Spence Bate, who afterwards gave the anthropologists a discourse on the subject. Mr. Bate described his own researches, and exhibited a large collection of drawings and specimens, including a remarkable piece of amber inlaid with gold, apparently the pommel of a dagger, which he had disinterred from a tumulus called Two-barrows.

Among minor communications on similar sub-

jects, we may refer to Mr. A. L. Lewis's description of the three stones known as the "Devil's arrows," near Boroughbridge, in Yorkshire, which he was disposed to assign to a Scandinavian origin, though arguing in favour of the pre-Roman origin of most of our rude monuments. Dr. Barham exhibited some flint flakes found in Cornwall and the Scilly Isles. A bone-cave in the Mountain Limestone, near Tenby, was described by Mr. E. Laws, and it is probable that this will be explored systematically by a Committee of the Association. Mr. Widger exhibited some organic remains from a cave, which promises good results, near Torquay.

Certain markings found in the chalk-galleries of the old pits at Cissbury, near Worthing, have excited Mr. Park Harrison's enthusiasm, and he has for some time past been engaged in an attempt to decipher them. Having recently obtained some more of these marks, he brought the subject before the Meeting, and pointed out the resemblance which he believes they bear to Phœnician characters. He compared the Cissbury markings with the characters of a runic inscription found on granite at Smolensk, and described in Bastian's *Zeitschrift*. Dr. Phene, who has recently returned from the East, read a paper on 'Mycenæ and its early Occupants'; whilst Mr. B. Hartshorne, who has lived in Ceylon, contributed an interesting communication on the 'Ancient People and the Irrigation Works of India.'

It is not often that anthropology touches upon chemistry, but Mr. H. C. Sorby has lately been engaged in an inquiry into the composition of the colouring matter of human hair, and, with his characteristic originality, has obtained unexpected results, which promise to become of value to the anthropologist. His researches, however, are not yet complete; and it is, perhaps, premature to describe the different pigments which he has obtained, and which he briefly brought before the Department.

Whenever Prof. Rolleston attends a Meeting of the British Association, he is sure to be one of the leading spirits of the Section to which he attaches himself. On this occasion, he favoured the Anthropological Department not only with a Report, referred to in our article last week, but also with three papers—one on the *rationale* of Brachycephaly and Dolichocephaly, another on the Artificial Deformation of the Head, and the third on the Fauna and Flora of Prehistoric Times. He has the power to throw fascination over the most technical subject; but as he speaks extemporaneously and is almost too fluent for a reporter to follow, his remarks do not generally appear in the *Proceedings*. In the present case, however, this is less to be regretted, since we hear that the subjects which he discussed at Plymouth will be dealt with in a work on which the professor is at present engaged, and which is already far advanced.

From the foregoing article, it will be seen that almost every branch of anthropology was represented at Plymouth. Philology, however, was not brought prominently forward; but Mr. Hyde Clarke was present, and contributed to the discussions, while the Rev. S. Beal, as an Orientalist, made some remarks on the exhibition of a Buddhist figure in soapstone.

ZOOLOGY AND BOTANY. (SECTION D.)

PROF. ROLLESTON gave an account of some new points in the Zoology of New Guinea, especially referring to the new Echidna, which is named *E. Lawesi*, from the discoverer. Various zoological facts were adduced to show that Australia and New Guinea had formerly been connected by land. Several groups of animals, including the echidna and the cassowary, were found on both sides of Torres Strait. Although the tree kangaroo, found in New Guinea, was not now known in Australia, there were proofs of its former existence in the shape of marks on trees which could only have been produced by it. The striking differences between the vegetation of Australia and New

Guinea was most probably due to the greater sensitiveness of plants, in certain circumstances, to physical conditions. The barren plains of Australia had a climate contrasting very much with the moist climate produced by the high mountains of New Guinea.

Mr. W. Ackroyd, in a paper on the colours of animals, endeavoured to show that brightness of colour was correlated with vigour, and also with power of conductivity for heat. The ventral coverings of many birds are white, the heat there being greatest, and external warmth being least required in that part of the body. Instances were adduced to show that the more remote from the centre of the vascular system any portion of an animal's covering may be, the more its hue tends to absorption of heat. Prof. Newton referred coloration rather to environment than to vigour. He described a species of birds in Canada and the United States, the male of which was of a beautiful black, with flame-coloured marks on its wings, while the female had a miserably dingy hue. The same species occurred in Cuba, and there both male and female were alike in colour.

One of the papers that excited greatest interest was that by Mr. R. M'Lachlan, on the Colorado Beetle. He described the history by which it has acquired its present fame, and the qualities which give it such a predominance in the United States and Canada. He said there was no native species in the British Isles that at all closely resembled it in ornamentation. With regard to the recent panic, there was as much necessity for legislation four or five years ago as now; the need of some legislation was real, but there was not a sufficient cause for the panic that had arisen. If the beetle could easily have been introduced or acclimatised in these islands, it appeared certain that the introduction would have been accomplished before the present time. Few potatoes were imported from America for food; the greater proportion were seed potatoes, and these arrived in the cleanest possible condition, so that the larvæ could not be packed with them or escape uninjured unless by direct intention. There was much greater chance of the accidental importation of the beetle in a promiscuous manner with general merchandise or passengers' luggage; and Mr. M'Lachlan had no doubt that it had been so imported again and again. Furthermore entomologists had received the living insects in all stages, but no harm had resulted; no scientific entomologist would permit any escape of the insect from his possession. It was possible, however, that the creature might be imported from sheer malice. But at the worst, it appeared very doubtful if the insect could be acclimatised in Great Britain. It had notably failed to be propagated on the western side of the Rocky Mountains, which had a climate far more resembling our own than the eastern regions of the United States. Yet, of course, the constitution of the beetle had shown itself very elastic, in being capable of spreading over a vast extent of country with no uniform climate. However, American animals as a rule could not be acclimatised in England, although American plants flourished most extensively. Another hope lay in the fact that we possessed a much greater number of insectivorous birds than North America; and the rook, absent in North America, had been especially pointed out as an enemy of this larva. Paris Green was the most effectual destroyer of the insect, without damage to the plants. In conclusion, Mr. M'Lachlan strongly advised that before sensational reports of the occurrence of the beetle were circulated, the advice of local naturalists should be sought. In the discussion which followed, Sir Willoughby Jones suggested that rooks, in common with other insectivorous birds, had a great distaste for the potato leaf, and that they probably would not be more disposed to eat the leaves when contained in the stomach of a larva than in the natural condition.

Dr. Otto Finsch's paper, 'On the Results of the North German Exploring Expedition in the West of Siberia,' announced the discovery of the tiger, the ounce, and the Saiga antelope as far

north as the Altai Mountains, and, most interesting, a pair of recent bones of the reindeer. There were larks, bustards, cranes, and sheldrakes in the steppes, and in the district of the salt lakes, Pallas's sea eagle, gulls, pelicans, and herons. There were no land mollusks in the elevated districts explored, but there were freshwater species. Only one amphibian, the frog, was found. Dr. Slater remarked on the occurrence of characteristic Indian birds in the Altai districts, which were not, up to the present, known to exist in the vast intervening tract. Prof. Newton pointed out that the reindeer, Saiga antelope, and *Tetraogallus*, found together in Western Siberia, also occurred in conjunction in the caverns of Auvergne.

Prof. M'Nab gave an account of a new classification of the vegetable kingdom, which he had drawn up, partly based on recent German works. It attempted a continuous numeration of groups from the lowest to the highest forms. He proposed to use the term "order" for the groups known as cohorts, and "family" for those frequently called orders. The apetalous orders were distributed among the other groups according to their affinities. Mr. Trimen objected to the distribution of the apetalae because of the practical difficulties that would be entailed in the recognition of plants, and said that recent classification had been detrimental to practical botany, and were fanciful in their bases. Mr. Bettany welcomed the greater prominence given in Prof. M'Nab's classification to the considerable groups rather than to the sharply defined, specialized, and limited families, however abundant in species they might be. He also advocated the exhibition of real relationships in a scheme of classification, for the purpose of teaching true morphology and physiology, rather than the laying of stress on those characters by which plants could be most easily recognized. Prof. M'Nab read another paper, in which he gave a most valuable synopsis of the known occurrence of flowering plants in geological time. He showed that Haeckel's views on the evolution of plants broke down in the light of facts. Haeckel assigned the appearance of gamopetalous plants to the Eocene, while one was known in the chalk. Monocotyledons were to arise in the Trias, but there were two palmaceous forms known in the Carboniferous. Also monochlamydeous dicotyledons appeared in the Trias, while none were as yet known in the Chalk. On the whole, Prof. M'Nab said that the evidence from fossils was that the gamopetalae were the more recent, and that the older forms were very variable. The monocotyledons he believed to have sprung from a single stock, the dicotyledons from several. Mr. Bettany said that all attempts to settle the phylogeny of plants that were not based on the embryological history of those at present existing must necessarily be uncertain, and liable to be upset by new discoveries of fossils.

Another important paper by Prof. M'Nab was 'On the Movements of Water in Plants.'

Among other interesting papers read before the Department were Prof. Dickson's 'On the Structure of the Pitcher of *Cephalotus*'; Mr. A. S. Wilson's, 'On Structural Characters in relation to Habitat in Plants'; Dr. G. Bennett's, 'On the Habits of the Pearly Nautilus'; and Prof. Heer's 'On the Fossil Flora of the Arctic Regions.' The papers were fully up to the average of former years, and several of the discussions were of high interest.

GEOGRAPHY. (SECTION E.)

On Friday a Report on the Line of Levels run from the Mediterranean to the Sea of Galilee, by Lieut. Kitchener, R.E., had precedence over other papers, a grant of 100*l.* having been made at the Belfast Meeting of the Association in aid of the work. The levelling was commenced in June, 1875, under the direction of Lieut. Conder, R.E., but was interrupted a few weeks afterwards by an unfortunate disturbance at Safed, which for a time put an end to all survey operations in Palestine. The work was taken up again in March, 1877, under circumstances of some difficulty, and carried to a suc-

cessful conclusion by Lieut. Kitchener. There had been no opportunity at present of examining the field-books and applying any corrections which might be necessary; but the reporter thought it might be stated that the line of levels, 35½ miles, was run with two instruments, a 10' spirit level and a 7" theodolite, read by independent observers, and that the result gave the Sea of Galilee a depression of 682·544 feet. The line of levels has been marked by 31 bench-marks, cut on the rock or on solid masonry in places where they are not likely to be destroyed by the natives, and the positions of the bench-marks have been fixed and laid down on the 1-inch map of Palestine which is being constructed by a party of Royal Engineers, under the auspices of the Palestine Exploration Fund. The levelling commenced on the shores of the Mediterranean at Haifa, and was carried thence across the Akka plain, past the villages of Jidru, Kefr Etta, and El Mejdal; from the last-mentioned place it was continued up the Wady el Melek, along the southern side of the plain of the Battauf, and over the ridge to the Wady el Hamam, down which it proceeded, and, passing through a great gorge between cliffs over 1,000 feet high, was carried over the plain to its termination at the edge of the sea.

A paper was then read by Capt. H. C. Marsh (Bengal Cavalry) on his journey overland to India in 1872, *viâ* Meshed, Herat, Candahar, and the Bolan Pass. The chief interest of this paper lay in the graphic description which the author gave of the scenery and people of the region he travelled through and the manner in which he was received by the civil and military authorities of Afghanistan, who treated him as a British officer, although travelling in his private capacity. He was well received and kindly entertained at Herat and Candahar, but was refused entry into Cabul on account of his not having the required permission to travel from his own Government, and was compelled to take the lower road into India *viâ* Quetta, Kelat, and the Bolan Pass. It was with great difficulty he was able to find guides to conduct him through the pass, owing to the fear of the robber tribes who infest it; and, having at length engaged one native courageous enough to undertake the task, he completed the journey, unmolested, by a hurried march of forty miles without stopping.

A paper followed, 'On Bashakard in Western Baluchistan,' by Mr. Ernest A. Floyer. The author made two prolonged journeys into the previously almost unknown interior of this remarkable country, whilst engaged in constructing the line of telegraph to India which runs through Baluchistan from Persia. Although small in area, Bashakard retains all the distinctiveness of a large country. It is so excessively mountainous that no animals except the donkeys of the country can carry loads in it. The paths are intricate and so little used by the sparse population that strangers cannot find them. The access of the natives of the surrounding country is thus, to a certain extent, barred; and there is in the disposition of Bashakard a mixture of pride and cowardice, added to intense ignorance, which makes them slow to mix with strangers. Mr. Floyer went on to speak of the general grotesqueness and barrenness of the huge crags which compose this district, and which take from the oxides of iron and lead they contain almost every colour of the rainbow. The remains of massive forts and extensive burying-grounds were described, and the Fauna of the country stated to consist chiefly of ibex, mountain sheep, bears, and porcupines. The population was estimated at 2,000, about half of whom are slaves. It is, however, many years since any new slave blood has been introduced, and Mr. Floyer was inclined to think that the ancestors of the present slaves did not come from Africa, for, though some of the men are very dark, he nowhere saw thick lips or woolly hair. A wealthy Bashakardi, such as the governor of a province, has about 100 slaves, a few of whom carry arms and remain near his person, while the rest are distributed about in six or seven little mat villages, where they sow maize, wheat, and beans, cultivate date-trees and tend goats and a few small

sheep. On the least rumour of fighting or disturbance of any sort, they retire into some lofty mountain fastness, where they have previously assured themselves of the existence of water. The country is divided into six provinces, which are simply so many clusters or ranges of mountains. These are: Marz to the north; Daroser, with the capital, in the centre; Gavr and Parmint to the east; Pizgh to the south, and Jangda to the west. These provinces are each under a governor, all of whom till recently submitted to a head chief at Anguhran, the capital. Seif Allah Khan, however, the late ruler, in pursuit of a blood-feud of long standing, shot down on his own threshold four of the leading members of the family of Ghulam Abbas, Governor of Daroser; and this family having obtained help from the Persian Government, which always keeps an eye on such matters, Seif Allah Khan was driven into hiding, though his tribe were so powerful that he could not be dispossessed of his extensive date-groves. After this the Governor of Kirman sent a tax-collector (one sent some years before had been murdered), and, through the medium of the Governor of Pizgh, whom the Persians promised to make head chief, they collected about 200 toman, being roughly three krans per head, from all the free population who could be induced to pay. The vicinity of Anguhran is almost the only flat space in the country. It is situated at the confluence of two huge torrent-beds, in the fertile silt of which, walled up from the winter freshets, are thousands of very superior date-trees. Here, as elsewhere, the only places available for cultivation are the deposits of silt in the beds of torrents. The climate is almost like that of England, though rather warmer; lime, orange, and fig trees are grown, and willow; a kind of pepper and pomegranate trees thrive. The peculiarity of the scanty vegetation of the hills themselves is the unusual abundance of powerfully-scented plants. The general elevation of the country is 2,000 feet, sloping down to the east and up to the north. The only trade is the occasional export of Sunaiti, a small red wheat, to Minab and dates to Jask, in return for which the inhabitants get salt, beads, coarse powder, and salt fish, and a very little calico. They make and wear a very coarse cotton cloth kilt and rope sandals of bruised palm-leaves; their arms are sword, shield, gun, and dagger. The Bashakard dialect is similar to that of the Makran Baluch, described by Mr. Pierce in the *Proceedings of the Bombay branch of the Royal Asiatic Society*; but it is much more corrupt, and contains many words the derivation of which Mr. Floyer could not ascertain.

In a paper 'On the Lower Course of the Brahmaputra or Tsampo,' Lieut.-Col. H. H. Godwin-Austen gave his reasons for supposing that the great river Subansiri was the outlet of the Tsampo. Whilst engaged in the survey operations of 1875-6 in the Duffa Hills, he could not, after looking north into the mountain region from the two highest peaks then visited, avoid being impressed with this idea. From the two peaks of Torupatu, 7,300 ft., and Shengarb, 6,700 ft., lying on the high outer ranges, the great main valleys on the north were well seen, and could be laid down on the Plane Table with very considerable accuracy, even to very great distances, as all the conspicuous peaks up to the snowy range, and several of its summits were intersected upon it. The finest view of this area was obtained from Shengarb, where he was detained for several days by heavy rain. During this interval a party of sappers and his Khasi coolies completely cleared the peak, which was covered to the summit with grand forest growth, so that the view was unimpeded in every direction on the bright clear day that rewarded their labour. Continuous observation revealed the run of the main ranges and ridges and the position of the deep valleys. The valley of the Subansiri was well traced, with its two main branches; one from the north-west, near lat. 28°, long. 93°, had its sources among the high mass of snowy peaks (23,000 ft.), so well seen from the valley of Assam near Tezpur, while another deep depression in the mountains lies just east of long. 94°, and joins

the first near lat. 27° 40'. The first of these the author took to be the tributary crossed by the native explorer Nain Singh on his way into Tawang from Lhasa, and the other he believed might be the Tsanpo. Other considerations in support of this view were the following:—1. The temperature of the Lohit or Subansiri where it joins the Brahmaputra is lower than that of any other tributary of that river, this being especially noticeable during the rains, *i. e.*, in June and July. 2. Mr. J. O. N. James, Assistant Surveyor-General, says it is borne out by the Revenue Survey Map of the District Sakluinpur, into which the Subansiri enters after leaving the hills. 3. Lieut. Harman, R.E., after seeing the Dihong at its junction with the eastern branch of the Brahmaputra near Sudiya, considers the Subansiri to have the largest body of water. 4. The Pundit Nain Singh could trace the Tsanpo, where he crossed it, for thirty miles east, and thence it flowed south-easterly, which would take it towards the great valley observed by the author; and 5, the hill people, on being questioned by Lieut. Harman, gave evidence which tended to show that the Subansiri and Tsanpo are the same, and that the Dihong is not the Tsanpo, as geographers at present generally believe.

On Monday morning a large audience was assembled to hear Commander V. L. Cameron's paper, 'On the Proposed Stations in Central Africa as Bases for Future Exploration.' These stations were a leading feature in the scheme of exploration and civilization agreed upon by the International Association founded at Brussels under the direction of the King of the Belgians. A Belgian Expedition was now being organized, and would soon leave Europe for the purpose of commencing operations, the leading idea being to found a chief central station at or beyond Lake Tanganyika, to serve not only as a starting-point and recruiting-post for explorers, but as a centre for the spread of European civilization and commerce. From this point M. Marno, who accompanies the Expedition as explorer, will endeavour to penetrate the undiscovered regions accessible from the station. Depots are also to be formed at Zanzibar and at some point in Unyanyembe. Commander Cameron, after describing the fertility and extreme productiveness of the regions he traversed, said that one very desirable way of opening up these rich regions would be by the establishment of one or more chartered companies, somewhat on the basis of the Hudson's Bay Company; but apparently the day had gone by for such enterprises, not that we lacked the energy that led to their formation by our forefathers, but that the spirit of the age was against the granting of such sovereign powers to trading companies. Next to such means of opening up Africa he believed the proposed stations might prove most effective. In founding these, great care would require to be exercised in choosing the men forming the *personnel* of the stations, who were to have such diverse functions assigned to them. All those petty jealousies which unhappily so often exist between traders and missionaries, and also between different sects, should once and for all be laid aside. There is room and field enough for all to work in their different spheres, and the sight of white men quarrelling among themselves, if only in words, is calculated to do infinite harm to the prestige of Europeans. In the discussion which ensued on the paper, Commander Cameron, on being asked by Dr. Beddoe to define the line through Central Africa which he would recommend as a highway to be opened up, with European stations established at intervals upon it, stated that one of the best lines would be that of the Lualaba, commencing with a line from the east coast to the north end of Nyassa, and thence following the chain of lakes and navigable waters from Lake Bangweolo downwards.—Sir James Watson (late Lord Provost of Glasgow) informed the Meeting of the great interest taken by the people of Glasgow in the independent scheme for the further exploration of Africa put forth by the Royal Geographical Society in consequence of the international movement originating at Brussels,

and stated that a local committee had been formed at Glasgow, and that a contribution of considerable amount would be made by them to the African Exploration Fund established by the Society.

A communication from Dr. J. Kirk, H.B.M. Political Resident at Zanzibar, was next read on his visit to the Mungao district in East Africa in 1876. The Mungao district is the most southerly division of the Sultan of Zanzibar's dominions, and extends along one hundred miles of coast from Kiswere, in S. lat. 9° 25', to the small stream that forms the limit of the Sultan's territory in the Bay of Tungi, at Cape Delgado. Previous to the survey carried on by Capt. Gray, of H.M.S. Nassau, in 1875, little was known of the different harbours of this part of the coast, and before 1870, the trade of Mungao consisted of a little copal, orchilla-weed, and cowries, but principally of slaves that came from the Nyassa lake. During the prevalence of southerly winds slaves were sent to Zanzibar, Somali-land, and Arabia; when the monsoon changed Arab vessels transported slaves to the Comoro Islands and Madagascar. So late as December, 1873, Vice-Consul Elton described the condition in which he found the Mungao district as follows:—"Trade is at a stand-still; copal digging is entirely stopped, the diggers being sold as slaves when on their way to the coast." Since then, Mungao had not been revisited until Dr. Kirk's southerly cruise, and he was much gratified at the improvement witnessed in the social condition of the people as the result of one year's cessation of the slave-trade under decree of the Sultan. He found that throughout the whole district the slave-trade was really at an end. The principal chiefs who carried on the wars for slaving purposes that depopulated the district so late as 1873 had become settled and industrious, and a commerce had sprung up that in one year had reconciled the people of Mungao to the new state of things, and opened up to them a new source of wealth—one which was wholly incompatible with wars and slave-trade. Last year the export of India-rubber from the Mungao district, under this new state of things, was 1,400,000lb., which represents approximately 90,000*l.* value. In this new industry the chief Macheмба and his people, who before were the scourge of the district, had taken the lead. But there are also many other sources of wealth, for the region is suitable for agriculture, and abounds in copal, cowries, orchilla-weed, ebony-wood, calumba-root, and dyewoods; while inland there is coal of good serviceable quality, and iron in abundance. Wherever Dr. Kirk came in contact with the people, he was glad to find the want of labour generally felt and acknowledged, and to meet with no sign of the slave-trade, the Nyassa caravans now passing by a direct route inland, and not through Mungao, as before. The plans and charts of this coast lately published by the Admiralty showed that it abounds with spacious harbours, some of which are land-locked, with deep approaches, and capable of receiving the whole British fleet. The chief of them are Kiswere, Mehinga, Lindi, Mwanja, Mtwara, and Mikindani. Any one of these places would afford a good station as basis for operations under the scheme set on foot by the King of the Belgians; but it would be necessary to ascertain which of them were free from the tsetse-fly, the presence of which would render impossible the use of bullocks for land carriage. Dr. Kirk found the fly dangerously prevalent in several of the best localities. It is not known, however, to exist at Lindi, which on this account could be recommended as the most suitable station and starting-point for the interior.

A paper descriptive of the River Kingani in East Africa followed, from the pen of Mr. F. Holmwood, Assistant Political Resident at Zanzibar. This river, which was thoroughly examined by Mr. Holmwood in July, 1876, disembogues opposite the island of Zanzibar, and was long classed as one of those hopeful-looking rivers which it was trusted might become highways to the interior; but, like the Rovuma, the Wami, and others, it has been found, though not absolutely

unnavigable, not to fulfil the expectations excited by the appearance and extent of its waters. Mr. Holmwood ascended the stream in the Church Missionary Society's yacht for 120 miles. Its lower course was found to be broad and shallow; its waters in this part inundating the adjoining flat country during the rains, and giving rise to the virulent swamp fever, which desolates the coast region in the neighbourhood of Bagamoyo during the greater part of the year. In ascending the river the average depth for the first 20 miles was found to be 18 feet, shallowing to 12 feet for 10 miles further. Its breadth averages 200 yards up to the first ferry (Kivuko) and 150 yards up to Kingwere ferry. Beyond the latter point hippopotami abound, and the width of the stream contracts to 70 yards, the navigation being also obstructed by snags and sunken trees, which leave only narrow passages, through which the water rushes like a sluice. The banks in the lower part are inhabited by the coast Suahili people; beyond, the district of Uzaramo commences, and the country becomes hilly. This continues for several miles, and then a wilder country is reached, where the important tributary, the Lungeregere, joins the main stream. The banks here abound in game, and gnu, water-buck, buffalo, and rhinoceros are plentiful. The position of the mouth was fixed by Mr. Mackay, a member of the Expedition, by observation, at 7° 0' 39" S. lat. and 38° 28' E. long. The Lungeregere was only 20 feet in breadth and two feet in depth, but it is not so tortuous as the Kingani. A few miles beyond this the main stream proved no longer navigable. It was 25 to 40 yards wide, and about 8 feet deep in the channel; but the obstructions in the deep water became so numerous that Mr. Holmwood decided on returning. Beyond the junction of the Lungeregere the Kingani is called the Mpezi; the natives persisted in declaring it to be a separate river, and could not be made to understand any civilized notions on the subject; a circumstance which shows how untrustworthy must be all African geography founded on the reports of natives. The result of the exploration was the conviction that the Kingani, as a navigable river, is practically useless.

On Tuesday the proceedings commenced with a paper or discourse by Mr. J. S. Phené, on his recent eight months' tour in Greece and through the islands of the Greek Archipelago, in which he described the mode of travelling he found necessary to adopt in the unfrequented parts of the country and the sites of recent archaeological discoveries. The paper naturally contained no new points of geographical interest.

A paper by Mr. Alfred Simson was then read, on his recent journey through the Republic of Ecuador, from Guayaquil to the river Pastassa, and thence by Indian trail through the forest to the river Napo. That part of Mr. Simson's journey lying between the rivers Pastassa and the Napo had never, as far as is known, been before traversed by a European. He began his journey by crossing the Andes by the little-frequented Tachuelo Pass, which lies to the south of the Arenal, the usual route followed in going to Quito and the Napo. The summit of the pass, 14,000 feet above the sea-level, is a small breach in a ridge, or wall, of solid bare rock, access to which is attained by a break-neck path winding over loose porphyry debris. The descent on the eastern side is also fearfully rough, the toilsome day's journey terminating at the town of Cajabamba. The road thence passes through Riobamba, and along the ledge of the Chambo valley, and across the torrent of the same name to Baños on the Pastassa. This remote village is built at an elevation of 5,904 feet above the sea level, and enjoys a mean annual temperature of 63½° Fahr. It lies in a cauldron-shaped valley, enclosed by the steepest mountains, the only outlets from which are the narrow gorges of the river. At night one cannot get rid of the depressing sensation of being at the bottom of a well, surrounded by high walls, with the sky only visible overhead. From Baños Mr. Simson started, with sixteen Indian porters, for Santa Inez, by

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unfrequented paths through dense forests drenched by almost continual rains, where landslips down the mountain sides often carry away all traces of the solitary track. Below Santa Inez several tributary streams, descending from the Andes, fall into the Pastassa, and present great obstacles to the traveller, being unfordable and liable to sudden rises, when they become wholly impassable torrents of enormous volume. The principal of these is the Topo. This much-dreaded stream forms the chief obstacle to communication between Ecuador and the countries to the eastward. The rise of its waters is sometimes so sudden that small parties of traders, with their train of Indian porters, have been separated whilst crossing it, and sometimes imprisoned between it and the next torrent, running parallel, for two or three weeks without the possibility of effecting an exit either way. It rushes, or rather springs, down its bed at a frightful pace; and, as this is filled with unevenly dispersed boulders piled up between high rocky banks, the waters leap up to a great height, filling the air with spray. It was in this condition as Mr. Simson and his party approached it after a wet and stormy day's march. The spray and even the heads of the crests thrown up from the boulders washed over the rude suspension bridge by which the stream is usually crossed. These sudden floods are caused by the sudden melting of the snow in huge rifts on the eastern flanks of the Ecuadorian Andes. The waters fell on this occasion as suddenly as they rose, and the author continued his march down the left bank of the Pastassa until he reached a small village of the Jivaro tribe of Indians, near the little river Pintuc. Here he commenced his westerly march across the country to the banks of the Napo. The path lay through the same continuous forest which clothes the whole of Eastern Ecuador, but the steep mountains had here subsided into lower elevations. A peculiar feature of the country was the constant recurrence of long ridges, with narrow summits, called by the Spaniards *cuchillas* (knives). These run generally for ten or fifteen miles, and have an elevation from their base sometimes as great as 500 feet. On one side they are almost perpendicular, and on the other they descend at a sharp angle. They are composed wholly of loose vegetable earth and loam, and are held together by the entangled roots and vegetation with which they are covered. The explanation of these curious ridges, which occur often between parallel rivers, is not far to seek, in a country where the denuding forces of copious precipitation and flooding waters are displayed on so magnificent a scale. They are simply those portions or "cores" of land which have resisted to the present time those denuding agencies that have been for ages at work grinding down the surfaces of the Eastern Andes, and spreading the materials over the plains at their feet. The coarser portions of the detritus are spread over the region immediately contiguous, forming the gradually sloping country through which the Napo and Pastassa flow, which has been worn into valleys, hills, and *cuchillas*; and the finer silt has been carried by the streams down to the Amazons and thence to the Atlantic. The route followed by Mr. Simson crossed the Bobonaza to the little settlement of Canelos and thence to the Villano, a tributary of the Napo through the Curari. The last-mentioned stream, scarcely known to geographers, has its sources on the outermost slopes of Llanganati, and after receiving the waters of the Villano, Nushinu, Supinu, Nagánu, Pundinu, and others, empties itself into the Napo on the right bank. The party reached the Napo, opposite Aguano, after eighteen days actual walking from Baños. The Napo at Aguano was found to be a noble river, broader than the Thames at London Bridge, even when not flooded. At this point the distance is 3,100 miles from the ocean, and no obstacle to navigation exists the whole way.

A second paper by the same author was next read, completing the business of the Section, 'On the Ascent of the River Putumayo or Iça, with a view to Steam Navigation.' On his journey

down the Amazons from the Napo, Mr. Simson seized an opportunity which offered to take the command of a small steamer lent by the Brazilian Government for the purpose of pioneering the way up the little-known River Putumayo, an affluent of the Upper Amazons on the left bank. The Expedition originated with some energetic merchants of Popayan in New Granada, who had entered into an agreement with the Brazilian Government with the object of opening up this stream to steam navigation and trade, in the conviction that it could be made an easy outlet for the products of the rich province of Pasto in New Granada surrounding its headwaters. One of these enterprising men had previously descended the river in a canoe, and being struck with its adaptability to steam-navigation, had purchased a small steamer for the purpose of regular trade communication. The Brazilian Government co-operated by lending a steam-launch which was to precede the steamer, survey the navigable channels of the river, and form depots of firewood at regular intervals for the use of the vessel that was to follow. Mr. Simson's adventurous voyage was completely successful. He ascended the river to a point 1,200 miles from its mouth, and found it free from serious obstacles. Its course, however, is extremely tortuous, and the lower parts subject to malarious fever. Throughout the whole distance it flows through an alluvial region clothed with dense forest, at present entirely unexplored. The Putumayo joins the Amazons at a point distant 1,700 miles from the ocean, and as lines of large steamers have been for many years established on the main stream, the establishment of steam-navigation on the Putumayo will now enable any one desirous of making the voyage to ascend from the Atlantic by steam to the foot of the Andes of New Granada.

MECHANICAL SCIENCE.

(SECTION G.)

THE first matter brought before the Section on Monday morning was the Report of the Committee 'On the Turning of Screw Steamers,' followed by a paper on the same subject by Prof. Osborne Reynolds. The Committee during the year had made many experiments which confirmed the conclusion of Prof. Reynolds, that the action of the rudder with the screw reversed when under full way, and moving slowly, is contrary to that intended. Vessels were steered under the seemingly obvious but entirely erroneous opinion that the way of the ship would cause the rudder to act as if she were going ahead, in spite of the screw being reversed. It was believed that many disastrous collisions had arisen for want of knowledge of this fact. The Committee were desirous that the Admiralty and others should take steps for satisfying themselves on this point. Experiments could readily be undertaken, which would verify those of the Committee, and the importance of the subject could hardly be over-estimated. Mr. Froude, Mr. Napier, and Sir William Thomson bore their testimony to the great value of the Committee's labours. — Mr. Froude then read a paper of a highly technical character, the object of which was to show the effect produced on the resistance to a ship's motion by the lengthening or shortening of the flat middle body between the bow and stern. The results were based upon experiments made at Chelston Cross with models having the same ends, but different lengths of parallel body inserted amidships. By separating the effect of the frictional skin resistance, which was proportional to the wetted surface, he proved that the increase or diminution of the power required to propel a ship, in consequence of the alteration of the length of the parallel body, depended very largely on the coincidence, or want of coincidence, of the wave crests travelling alongside the ship with the points at which the reduction of breadth by the fine lines began. When this diminution coincided with a wave crest there was no loss, but rather a gain of speed; while when it coincided with a wave hollow, the loss of speed, or increase of resistance, was considerable.

Mr. Froude read a second paper on a new dynamometer for measuring the power delivered to the screws of large ships, the designing of which had been entrusted to him by the Admiralty.

Capt. Aynsley gave the results of the experiments of the Admiralty Boiler Committee, and exhibited, in illustration of this, a large number of specimens lent by the Admiralty for the purpose.

Prof. Barff contributed a paper descriptive of his process for the preservation of iron. Its contents have already been referred to in last week's notice on Section B.

A new mechanical furnace used in the alkali manufacture, and for calcining purposes, formed the subject of a paper by Mr. James Mactear; and 'Lode-mining in the West of England' was well described by Mr. J. H. Collins.

On Tuesday the proceedings commenced with the Report of the Committee appointed last year to make an investigation as to instruments for measuring the speed of ships, read by Mr. Shoolbred, which was of an interim character. Owing to other important professional engagements Mr. Froude had been unable to complete his valuable series of experiments; and the Committee requested, therefore, to be re-appointed, with a renewed grant of 50*l.*, none of which had yet been expended.

The Report of the Committee for considering the Ordnance Datum of Great Britain was read by Mr. Shoolbred, who also contributed an explanatory paper on the subject. Sir William Thomson was the chairman, and it will be remembered that the Committee was appointed to investigate the causes of the uncertainties in this matter referred to in the communication made to the Association in 1875. The Committee came to the following conclusions:—

"1st. That of the two tide gauges at Liverpool now purporting to refer to the level of the Old Dock sill, the zero of that fixed at the south-east corner of the Canning Dock is about 5·64 inches above that on the river face of the Canning Island, Liverpool.

"2nd. That in order to reconcile the statement in the Ordnance Book of Levelling, that the Datum Level for Great Britain is 8·10ths of an inch above the mean tidal level obtained from the records of the self-recording tidal gauge on the St. George's Pier, Liverpool, with the actual facts which the Committee have collected, it is necessary to bear in mind that the records of the self-acting gauge referred to were the observations of one month only of the year 1859, and that the mean tidal level of that period was 7·8 inches below the mean of the decade 1864 to 1873.

"3rd. That the difference of levels between the Old Dock sill and the Ordnance datum, given in the Ordnance Book of Levelling as 4·67 feet, is correct on the assumption that the zero of the gauge on the face of the Canning Island, and not that of the gauge in the Canning Dock, be taken as the correct level of the Old Dock sill; and that, as stated in the Ordnance Book of Levelling, the Ordnance datum be taken at 8·10ths of an inch above the mean tide level of the month of May 13 to June 14, 1859, as ascertained by the self-recording tide gauge of the Mersey Docks and Harbour Board.

"4th. It is thus apparent that the Ordnance datum is an entirely arbitrary level, which could not be again obtained from tidal observations."

The Committee further thought it advisable to take advantage of the present inquiry in order to obtain information as to some of the various local datum marks in use in the British Isles, and to endeavour to ascertain the difference of each relatively to the Ordnance datum, which would thus become a means of comparison between them. In order to enable the Committee to carry out this work, they asked to be re-appointed.

Capt. Douglas Galton then described the elevated railway in operation in New York, which provided for a rapid transit through streets in which the traffic was large. The line was carried on columns 9 inches in diameter, standing at distances of from 26 to 30 feet apart. Carriages moving at full speed could by means of an

atmospheric break be stopped in about their own length. The line was economical as compared with the underground railway, the total cost per mile being about 55,000*l.* Mr. Stevenson, of the Wantage steam tramway, explained his design for a suspension railway for street traffic. His proposed mode of construction consisted in the formation of a line of rails suspended from vertical bracketed columns, or from brackets projecting from buildings or archways, the columns, brackets, and bearings to be placed at convenient distances from each other along the outer edge of the pavements in streets, or by the side of the highways. The great dissimilarity of the invention from ordinary railways on street tramways was in the particular formation of the permanent way, which would be supported by clip suspension. The cost would not exceed 3,000*l.* per mile.

Sir William Thomson drew attention to the importance of giving a distinctive character to the Needles' light, and submitted to the Section an improvement on his method of taking flying soundings as described at an earlier meeting of the Section. Instead of using the reaction of sulphate of iron and prussiate of potash for marking the pressure in the glass tube, he has succeeded in omitting the sulphate of iron, and using the water of the sea instead. The tube is lined with prussiate of potash as before, which is treated with a solution of nitrate of silver, by means of which a film is formed, which leaves a deposit of metallic silver in the tube, wherever brought into contact with the sea-water, as it rises under the pressure due to the depth to which the tube is sunk.

The Eddystone Lighthouse was then described by Mr. J. N. Douglas, who somewhat startled the audience by the intelligence that, owing to the wearing away of the rock foundation, Smeaton's marvellous edifice is doomed, and that the Trinity House have decided to take it down, and to erect another lighthouse in its stead.

The Section met on Wednesday to complete the reading of papers left standing over from the previous day.

Mr. F. J. Bramwell described the method by which the asylum at Banstead has been heated, and stated that the water was heated from one source and circulated throughout the building by means of a centrifugal pump. The most efficacious results had been attained; and as the asylum was constructed on the pavilion or separate system, the temperature in one section could be altered without interfering with that in the others. The water was derived from a deep well in the chalk, and was of about seventeen degrees of hardness. For general domestic purposes, and in order to prevent the deterioration of the heating apparatus, soft water was necessary, and the conversion was made by Dr. Clarke's process, as carried out by Mr. Porter, and that, too, with perfect success.

M. Bergeron, a French civil engineer, read a paper, in which he explained some experiments he had made at Boulogne on his system for removing sand bars at the mouths of sea harbours—a system which was before the Section on a former occasion, consisting in principle of small streams of water ejected from lateral holes in pipes laid on the sand. The French Government consented to try the method on a large scale, but as the credit of 10,000 francs was exhausted before the experiments were completed, definite results were not obtained. Sufficient occurred, however, to demonstrate that when the bar was exposed at low spring tide it could be sensibly diminished.

Mr. Loftus Perkins then read a paper 'On a new form of High Pressure Steam-engine,' remarking that to make an engine which would work with safety at a pressure of a thousand pounds might appear difficult, but it was really not so when the boiler was constructed with tubes of small diameter. The higher the pressure the greater the power that could be obtained from a given quantity of steam; therefore, the higher the pressure the greater the economy of fuel. One important point connected with the boiler he had invented was its absolute safety. Such an accident as happened to the Thunderer was impossible with it, and he hoped

the Admiralty and private owners of steam machinery would become impressed with the fact that disasters of that character could with certainty be prevented. The boiler could be so designed that all its parts would be interchangeable. It would never prime, and there was no necessity for the usual blow-through and relief valves.

Mr. F. N. Varley read a brief paper 'On Electric Block Telegraphs,' and the proceedings of the Section were concluded with the usual votes of thanks.

MEETING FOR THE ENSUING WEEK.

TUES. Horticultural, 11.—Fruit and Floral Committee. 3.—Election of Fellows.

Science Gossip.

It was announced at a meeting of the French Academy of Sciences on Monday, that M. Borelly, whose name is already so well known for his additions to the solar system, discovered the two satellites of Mars nearly at the same time with Prof. Hall at Washington (as mentioned in the *Athenæum* last week), and, indeed, obtained definitive proof of their being satellites a little earlier. Prof. Hall's micrometrical measurement of their respective distances from Mars was presumably made on August 18th. Particulars of his determination of the period of one (whence that of the other has been inferred by Kepler's law) are not yet to hand. The exceptional nearness of Mars to the earth at the present opposition, bringing it within thirty-five millions of miles, will, it is to be hoped, enable astronomers satisfactorily to determine the circumstances of the motions of the small bodies now at last found to circulate round our ruddy neighbour. If, amongst the many similarities of his condition to that of our own planet, it has been hitherto supposed to be a case of the reverse, that he was without any moon, it may be doubted whether his possession of two increases the similarity, especially as one of the two must (if its period is correctly determined at considerably less than that of the rotation of Mars) appear to rise in the west and set in the east, contrary to the analogy of anything we see around us. The means these new bodies afford of obtaining a better knowledge than those previously available of the mass of their primary will be eagerly welcomed by physical astronomers; and it already appears likely that the result will be to sensibly diminish the value hitherto received.

The total eclipse of the moon on the 23rd ult. was well observed. The complete visibility of the moon throughout the time of totality showed a more than usual degree of refractive power in extensive regions of the earth's atmosphere. The reddish tinge, deepest at the margin of the disk, was very remarkable, and observations of this kind have great interest in a meteorological and, perhaps, also in an astronomical point of view.

We have received several letters complaining of the arrangements at the recent Meeting of the British Association.

The *Geographical Magazine* for September states that the project for despatching an English expedition to Lhasa, the sacred capital of Tibet, has now definitely fallen through. This is much to be deplored, and so much the more as it appears from the statement of our contemporary that the opportunities which offered themselves to the Indian Foreign Department for opening up trade communications between India and Tibet were exceptionally favourable, while, in the person of Mr. Ney Elias, the Government had an *employé* whose diplomatic experience, combined with his great scientific acquirements, fitted him pre-eminently for the post of emissary in this important enterprise. But neither in the guise of a Government envoy nor as private traveller could the Calcutta Foreign Office be persuaded to look upon his mission with any sincere approval; and after much discussion and delay, the whole project has been suffered to collapse through sheer apathy on the part of the authorities.

FINE ARTS

DORR'S GREAT WORKS. "THE BRAZEN SERPENT," "CHRIST LEAVING THE PRETORIUM," and "CHRIST ENTERING JERUSALEM" (the latter just completed), each 33 by 25 feet, with "Draught of Pilate's Wife," "Christian Martyrs," "Night of the Crucifixion," "House of Caiaphas," &c., at the DORR'S GALLERY, 35, New Bond Street. Daily, Ten to Six—1*s.*

THE PRIVATE COLLECTIONS OF ENGLAND.

No. XXXI.—HOLKER HALL.

ALMOST on the edge of the sea, amid abundant foliage, and surrounded by ample space of sward, stands the Duke of Devonshire's beautiful Lancashire villa, which contains many pictures that were collected about a hundred years ago by that well-known politician Sir William Lowther, and passed, by inheritance, with the estate, to the present Duke when Earl of Burlington. By his Grace's indulgence, we are able to describe the works of art, comprising many large and noble landscapes, some cabinet pictures of extremely interesting character, and a few specimens that have peculiar charms. Our task would have been a happier one but for the destruction by fire, on the 10th of March, 1870, of a very considerable part of this collection, including several of the more important paintings, such as one of the most famous of Claude's pictures, the companion to the 'Mercury and Argus,' which is mentioned below; likewise the very beautiful 'St. Christopher Baptized by Christ,' which was variously ascribed to Albert Dürer or Memline, was certainly not by the former, and undoubtedly was a Low Country Gothic picture of the school of Van Eyck, probably by Van der Weyden, Bouts, or Memline; it had been long celebrated for its beautiful and sumptuous colouring, its luminosity and perfect preservation. The landscape was a remarkable element of this treasure. At this time were likewise destroyed a famous sea-piece, by J. Vernet, known as 'A Calm,' the companion to 'The Storm,' which is named hereafter; a capital landscape by J. Ruysdael, called 'The Windmill,' painted in the best style of the painter, and including a cottage, two men and a boy; the mill was in the centre of the background; an important Canaletto shared the same fate with Reynolds's portrait of Sir William Lowther, the founder of the collection, and other fine paintings. The total number of pictures lost on this deplorable occasion was ninety-eight; not a few of those which we have now to describe had a narrow escape, and many were saved by the strenuous exertions of the inmates of the Hall.

The more important rescued pictures now in question comprise works by Van Dyck, some superb and perfect Claudes, one of Reynolds's Florentine caricatures, a very curious picture, Tenierses, Ruysdaels, G. Poussins, a fine landscape by Rubens, and works by Hobbema and others; likewise a few ancient and modern drawings in chalk and water-colours. From the still rich collection we have selected for notice the choicer specimens. Holker Hall is not, we believe, generally shown to visitors; it is peculiarly the Duke of Devonshire's own house—his favourite villa.

In the Dining-room at Holker are two of the best church interiors, works of Peter Neefs, in England; the more important examples of the skill of this capital master have not been removed from Holland, where many of the churches themselves remain to this day "unrestored" and, for the most part, in much the same condition as when Steenwyck, Neefs, and their fellows depicted them with so much care and skill. With the advent among ourselves of the "restoring clergy," who have inaugurated the era of new chancels and all that is implied by these significant aids to ecclesiastical "performances," have vanished the charm of unsophisticated architecture, and the picturesque venerableness of antiquity in church building. On the other hand, it must be remembered that the churchwardens of Holland in Neefs's time were as zealous whitewashers as their brethren of this island; accordingly, pictures of

the class now before us show buildings as distinctly white as they can be; they are as void of stained glass and pictures as the Iconoclasts had made them, but they retain the escutcheons and other insignia of human pride which are so interesting to antiquaries and historians. The white-washing habits of the custodians of these churches, and the paucity of pictorial remains in their windows and on their walls, must be taken into account by all who remark the monotony of the whiteness, the poverty of the colouring, of the Dutch church-painters in the seventeenth century. These artists did not look for the rich tones and tints which modern painters have found in analogous subjects, and they seemed to have formulated principles of treatment analogous to those which suited the flimsy felicity of the late Mr. David Roberts, who looked to Neefs as a model, whereas a genuine student would have followed Steenwyck in preference, because the latter painted with greater luminosity, delicacy, richness of tint, and care than the former did. The works of Neefs are remarkable for breadth of effect, truth of linear perspective, and strong contrasts of light and shadow; they tend to a monochromatic character, and, in late productions, frequently exceed truth in the brownness of the shadows. One of the works now in question gives a view of the church at the entrance, with a vista of an aisle, a cross-light very effectively rendered at the end of the vista. It is one of the warmest and most solid of the master's productions, and exhibits amazing precision and delicacy of touch without his characteristic metallic defect. It contains small figures, possibly by F. Franck. Neefs rarely showed that pathetic element which is distinct in this picture, for sentiment such as the effect here depicted expresses was by no means his strong point.

The effect of the companion picture to the above, apparently another view of the same church, strongly contrasts with that of its fellow. Here we have a vista of the nave and aisles crossed by the jube, and showing a low roof, the whole in a broad, open light, which is very finely rendered. Priests are moving in procession under a canopy, and apparently, for the pictures are not favourably hung, they bear the Host; the priests are saluted by the spectators and promenaders; at the base of a pier on our right the figure-painter has introduced a sexton digging a grave, a frequent incident in such pictures as this. The figures are very likely the work of Franck, who did not invariably sign his share in Neefs's works. Both of the Duke of Devonshire's pictures are signed. The incident of the grave-digging occurs in a capital example of this category, which is now in the Bethnal Green Museum. No man who cares for pictures of church interiors should omit to see those marvels by W. Hunt now on loan at Bethnal Green. They are in water-colours, and models of sober delicate colour, precision and refinement of touch, clearness, and breadth; they represent views in one or more churches at Watford, Bushey, Aldenham, or elsewhere in that neighbourhood. Mr. Boyce has painted many church-interiors in the right faithful manner we shall not soon forget; sumptuous studies in the church at Münster, one of which was lately exhibited, are those by Mr. Alma Tadema; in richness and strength of tone and tint, exquisite fidelity in the treatment of light, these studies comprise Italian qualities with Dutch ones.

The name of Buchtenschild is given as the painter of two charming coast-pictures which forcibly recall Ruysdael's art, and display subjects that master affected. They comprise boats floating near a beach, and boats entering a rude harbour. Their characteristics are luminosity of the tender nature of Van de Capella's manner, with Ruysdael's tendency to blackness, and not a little of Backhuizen's metallic excess. The difficulty attending an attempt to unite Dutch motives to a quasi-classical style is curiously illustrated by Joseph Vernet's vigorous and effective picture, 'The Storm,' before alluded to as having lost its companion, 'The Calm,' in the conflagration at

Holker. That which was saved is, we believe, the better of the two, it undoubtedly possesses remarkable merits of execution and conception. The scene is a rocky cove of great size, with, in the front, figures landing wreckage, and otherwise engaged. A huge high peak is near, and, beyond it, an arch of dun-coloured cloud, designed according to the rule of Vernet's *atelier*, has been reared so as to show a brightly illuminated firmament. Among the very faithfully depicted elements of the work, elements which are as Dutch as Dutch can be, is a large wave that, on our right, is rushing to break on the shore, and proves that the painter could have carved a billow in marble to perfection, so beautifully did he model and draw it. We must not forget to admire the animation which marks this painting.—Not far from the large French coast-piece by Vernet are two hardly less conventional and equally artificial pictures by Wouvermans, thoroughly good representatives of his art, its good and questionable features, its successes and its shortcomings. One of these exhibits a halt of horsemen at a sutler's tent; a love-making incident occurs, with, in the background, a huntsman. It has the clearness of the half-tints and shadows which distinguish the best period of the painter, and is, on the whole, one of the gems of his handiwork. The second Wouvermans shows horses watering at a pond, one of them is plunging. Two men are bathing in the front.

Among the most brilliant, rich and beautiful works at Holker is a small, highly-finished whole-length figure, a sketch or study by Van Dyck for the famous large portraits of Rachel de Ruigny, Countess of Southampton, in the De Grey and Althorp Collections, which shows her seated on clouds, and with one hand on the crystal sphere that occasionally appears so tellingly in the master's portraits. She wears a blue mantle over a white robe, a blue scarf blows out behind her shoulders. The whole of the painting of this picture, which appears to have been recently varnished and to be in capital condition, is pure, brilliant, warm, and fine. As a small study by Van Dyck it is very precious, apart from its subject and preservation, and the very remarkable spontaneity of the design; the last is a rare quality in allegories such as this, it is, therefore, the more valuable in this case. Another Van Dyck attracted us next in order. It exhibits a strong and fine infusion of the motive of Rubens, and is exactly such as Reynolds proposed to himself to rival in his own manner. It is the standing figure to the knees of a young man, who leans his right elbow on a pedestal, the fingers of the left hand being on one of the mouldings of the same. The back of the right hand, the wrist being dropped, is displayed in the manner of the artist, with all his fastidiously elegant affectation in the posing of the fingers; there is a ring on the little finger. The face is in three-quarters view to our left; the eyes look to the front; bright brown hair clusters over the forehead and about the ears with the grace given by painters to Adonis. There is a charmingly animated smile on the ruddy lips, and this expression is repeated in the arch dark eyes, which seem to brighten as we look at them. The background is a landscape. It seems to be an early picture, possibly painted by Van Dyck from himself, but not designed as a portrait or intended to represent the producer. It is a noble piece of his work, marked by the silvery tones and perfect solidity of execution so prevalent in his earlier efforts, and fit to be classed with the fine portraits of Snyders and his Wife, which we saw in the Duke of Cleveland's collection at Raby Castle. It exhibits less of glazing than usual.—A capital Carlo Maratti, representing a 'Sleeping Child,' lying under a blue canopy, and painted in the ornate and pretty way so frequent in the artist's less pretending mood, may well have place here. It is a good example of its class, which is a large one.

Near the Duke of Devonshire's beautiful Van Dyck is a great curiosity, being one of the satirical sketches made by Reynolds in Florence, a cari-

cature which has been engraved, and comprises four standing male figures, those of gentlemen, companions of Sir Joshua in Italy, and a dog on our right. The execution is very rough, and the disproportions of parts of the figures, intentional or otherwise, are extremely ludicrous; the colour has been applied in large, bold dashes. Three, if not four works of this category, caricatures properly so called, are known to students as having been executed by Reynolds in Italy. In this collection is a repetition of the Windsor triple head of Charles the First, the two profiles and full face, used by, or intended for the use of, Bernini. Likewise a fine portrait of James the First, and a good Duchess of Cleveland by Lely. A portrait by Marc Gerrard, interesting as bearing the date "1608," will be found at Holker. It represents a young lady in a white dress.

The great works here are the Claudes, more than one of which is identifiable by means of the 'Liber Veritatis,' the famous volume which is among the Duke of Devonshire's treasures. The first of Claude's pictures we shall notice is 'Mercury and the Herdsman.' The two converse at the foot of a tree. Cattle are at the side of a pool in the centre of the front, which is backed by masses of foliage, through which the spectator has glimpses of a river in a vista issuing from hills on our left, with cliffs that are illuminated by the splendid sun from the right. This is a very noble though small picture, distinguished by a wonderful glowing light and prodigious breadth and brilliancy. It seems to have been cleaned, lately, and with care, and is a capital example of the later portion of the middle or superior period of Claude's art. Dr. Waagen thus described the companion landscape to the above, which, with other works, was burnt as before stated. "On the right are three Corinthian columns, with [their] entablature. Behind and beside them, more towards the centre, are trees. On the left, quite in front, are stems of trees. In the centre a small piece of water, clear as silver, with a small town, with walls, upon it. The distance terminates in tender blue hills. In the foreground is a shepherd, almost undraped, blowing the bagpipe. Behind him are goats. In the middle-distance is another shepherd, who stands out dark against the water, and is driving his flock behind the ruins and among the trees. A charming composition, with very transparent distance, but, unfortunately, darkened in the foreground. Of a somewhat later but still excellent time of the master." By "later" Dr. Waagen probably meant "later" than the time to which we owe 'Mercury and the Herdsman' (or Argus). The latter picture, owing to judicious cleaning, or, possibly, to an improved position as regards the light, impressed us much more favourably than Dr. Waagen was impressed when he saw it twenty years ago. Notwithstanding the reddish excess it exhibits, and that defect of purity in the verdure which has "poured a browner horror o'er the trees," we cannot fail to enjoy the fine qualities which are abundant in the picture.

A much more famous Claude—which, being about seven feet high by nine feet wide, is of uncommonly large proportions—is that which distinguishes the principal room at Holker Hall, is named 'The Temple of the Muses,' and has been identified by means of the drawing No. 126 in the 'Liber Veritatis.' The defect of this magnificent picture is, undoubtedly, that feature which takes the eye before any other. This is the huge figure of a river-god, the deity of the Castalian stream, who, recumbent beside his fountain, occupies much of the foreground on our right. On our left, distinct on a rocky hillock, stands the Temple of the Muses; Apollo and the "ladies nine" are placed on a small plateau below, close to the temple and under the spreading boughs of enormous trees. The sacred fount curves about the base of the hillock; on its surface the Heliconian swans float in graceful ease, deer are stooping to drink its waters, and poets advance towards its banks: the group of bards is beautifully designed, and each figure has a genuine and spontaneous movement. A river is in the mid-distance, a broken "romantic"

country appears beyond, and is traversed by a vast and effectively introduced, very cleverly managed cloud-shadow. Claude was one of the first, if not the first, of landscape-painters to deal ably with flying cloud-shadows as efficient elements in the chiaroscuro of their pictures; by this means he often added prodigiously to the charm of views of wide campaigns, and added much to the inspiration of those "antres vast and deserts idle," in which his profoundly romantic and imaginative spirit so often took delight. Further on, that is beyond the broken country of this painting and its huge shadow, are hills of various blue, and these extend to a line where a lofty acropolis-like rock, but without a temple on its summit, appears against the lighted sky; and so on, from cliff to cliff, and over manifold ridges and valleys, the eye is led to the utmost horizon, where a palish rose light is displayed in subtlest gradations of tint in tint, and extends overhead to a deep blue calm sky, with, intermediately, films of white vapours, that are hardly clouds, spreading over it. A mass of dark trees rises, as described above, from near the "Muses' seat," and its enormous foliage, heaped, so to say, on silent boughs, seems to be for ever motionless in the air; if it were otherwise how could the songs of the goddesses be heard? This mass of foliage is a noble part of the composition, and it has been introduced with conspicuous art; its parts are less and less dense as they recede from the eye, and they repeat other features of the design in forms of rare grace and delicacy. A vast oak, decayed and rent, the counterpart mass to the unfortunately contrived river-god, is on our right of the picture, in front. Such are the more obvious features of a picture which is one of the most solemn and poetical of Claude's productions. The finish of this work is unusually close and careful.

Another famous Claude bears the title of the 'Riposo,' because in its foreground the angels kneel before Christ seated in the lap of His mother, and salute the fugitives during a halt in their journey to Egypt; one of the angels has brought flowers to the travellers, the other, with bowed head and crossed hands, seems to be silently adoring. Joseph, in the act of reading a book, sits, or rather reclines on rocks on our right. The ass stands near. A fortified (Italian) town appears on the bank of a river in the mid-distance, the river is crossed by a bridge which has been introduced after the mode of Claude in so many "compositions"; five arches of the bridge are visible from our standpoint. A rock is near the bridge on the bank of the stream, and from the rock rises a lofty tower. A cascade bars the river. From this a shadow steals, so that it will soon leave the water in full light; the shadow still extends from the distant higher bank, and contrasts in colour and character with the reflections on the other side of the stream. The shadow is projected over the bridge. A gleam of light falls on the bastions of the city walls, and on part of the neighbouring plain. The distance of this magnificent, and, so far as its effect goes, unusually complex, landscape contains a mountain of deep cerulean tint. The tender glow of a fine morning light is on our left, partly hidden by the foliage of a towering elm which is prominent in the foreground. Groups of trees are on the nearer bank of the stream, and they hide part of the city, sunlight strikes on the walls, which are distinguished under the boughs on this side of the composition. Dr. Waagen tells us that "this picture occurs in the 'Liber Veritatis,' No. 88. No. 47 also presents a very similar composition." This critic recognized, he tells us, the hand of Sasso-Ferrato in the group of the Holy Family and the Angels. We are not quite satisfied with this notion, but it must be admitted to be a shrewd one. The motive of the figures is less dignified and spontaneous than we generally find in Claude's designs, and the group displays graceful affectations in the fashion of the most affected of masters, the finicking Sasso-Ferrato himself. The very blue drapery of the Virgin is out of keeping with the rest of the picture; this is doubtless due to the

unfading quality of the ultramarine with which it was painted, and it probably helped the doctor to his criticism, the idea of which is probable on other grounds, and gains support by the over-definition of the figures. As a landscape pure and simple, the sentiment of this example is of the highest, most impressively poetical order; the "romance" of Claude never had a truer, purer inspiration; the peaceful suggestions of the scene are exalted by the charm of the effect. The last element of its fortune is largely due to the tender pearliness of the early daylight which is spread far and wide over the expansive view, to the exquisite quality of the sky, to the dignity and breadth imparted by the arrangement of the masses of foliage, to the wealth of subtle tints on the campaign. The dawn of a day of repose, the approach to a place of security, the serenity of rest that had been long-earned and is destined to be long unbroken, prevail throughout this picture, and act like a spell on the observer who sits before it. The canvas is "upright," and it bears that which is doubtless one of the largest of Claude's masterpieces in that form, for it measures eight feet high by five feet wide. As usual with Claude, the proportions if not the dimensions of this picture were chosen to accord with the subject, or rather they were employed in aid of the sentiment which it was his intention to evoke in the mind of the student, and thus the exaltation, the heavenly sweetness of the motive owes not a little pathetic expressiveness to the fact that the lofty proportions of the canvas admit the serene sky in an unusual extent, and beyond that to an extraordinary height. What painters call accidental elements, such as the moving shadow and the growing lustre of the light, are unusually distinct in this work; they, of course, impart a dramatic quality to the design, and materially aid in impressing the artist's intention on the observer.

At Holker we find a good Teniers, signed with the artist's cipher, the well-known D.T. The scene is the interior of a cabaret, where two men are playing at cards, and using the bottom of an inverted tub as their table, before which they sit on stools; an old man on our left follows the playing of his younger opponent. A peasant, who is about to drink from a jar, sits behind the gamblers, and looks at the "hand" of the former player. A fourth countryman stands behind with a pipe in his hand. Two figures sit at the side of the fireplace in the background. A large jar on our left, and a dog on our right, both being in the front, are both first-rate specimens of Teniers's facile felicity in dealing with such details; the care employed in producing these accessories, as well as their prominence in the composition, indicate with other qualities the period of the picture to be that which is styled the middle of the artist's career; the excess of brown in the shadows, and the monotony of the brownness, declare that this is a late specimen of the period to which it belongs.

A good Jacob Ruysdael is that nearly square picture which shows a road traversing a landscape, the whole being treated like a De Koningh. This painting has blackened. The road, in a pale grey tone, extends to a wood in the distance; beyond the latter a church-tower rises to view. The time is harvest, shocks of corn stand in the fields. Two figures are in the foreground. The sky is of a rich blue, with dense white clouds driving through it towards our right. It is a very fine and solid picture, belonging to the best time of Ruysdael's art, and remarkable for the beauty of its aerial perspective; the tender grading of the sky in the distance adds materially to the power of this charm. The work is delicate, and rich throughout, and, in its way, full of poetry. Another Ruysdael recalls the peculiarities of Hobbema even more powerfully than the former one brings the motive and manner of De Koningh to mind. There is doubtless great confusion in the naming of pictures by these masters severally, and connoisseurs have been too ready to sort them according to the peculiarities of the subjects, as if Ruysdael had never painted a wide

grey-green campaign of Holland, or De Koningh a rocky pass in the Ardennes or Hainault, a canal à la Hobbema; as if Hobbema was incapable of a waterfall or a sea-shore dune, with waves of sand, scant foliage and reeds that bend before the wind.

No doubt those voracious gentlemen, the dealers of the last generation—their living representatives are incapable of such acts—sold their old masters according to the market; it was much if the pictures were really old, and not new ones, if they were painted by Dutchmen of the seventeenth century, not by Frenchmen of the nineteenth. Not long ago an expert, an exceptional authority in the matter, related in these columns how Michel's Low Country-like pictures were in the market with names of old Dutch masters in landscape, and gave an instance of a work such as the poor painter of Montmartre gladly sold for fifty francs, which had been renamed after Huysman of Mechlin, who happened to have been in vogue. As to the latter master, it is edifying to observe that Dr. Waagen, in what may be called his Doomsday Book of art in England, found, or at least took note of, fewer than half-a-dozen pictures bearing the name of Cornelis Huysman. It is true, however, that the doctor, in whose path we have often followed, must have had but faint sympathy for Low Country landscape of the seventeenth century; his descriptions of many pictures of that category which are gems in our eyes are brief and spare, his analyses of their qualities are comparatively weak. We are bound, nevertheless, to add that great injustice and deplorable ingratitude have been shown to Dr. Waagen, who helped to smooth the paths of inferior and less soundly accomplished scholars; had he attempted less, or possessed insight of a brighter, higher character, the ambitious German *savant* would have done better.

Dr. Waagen was undoubtedly right in admiring the little nearly square Ruysdael, which he numbered "5." We have been unable to identify in his notes the Hobbema-like picture by the same artist, but presume the 'Cottages in a Wood' is his No. 1 of the category of Ruysdaels at Holker. It is unusually like a Hobbema in colour and, above all, in feeling for the deeper tones and greys, and in the solidity of the handling and abundance of pigment it exhibits. Buildings are on our left, and occupy the low rocky bank of a stream; smoke issues from one of the chimneys. Trees are behind on the road and a rising ground is on our left. Sunlit clouds float in the blue depths of the sky. There is another Ruysdael here pendant to the last-named ones, and styled 'A Woodland Scene,' which is less solid than the 'Cottages in a Wood,' and therein more like the ordinary work of the artist. It has a very fine sky, and deserves to be remembered on that account. The difficulty of identifying the pictures described by Dr. Waagen in his notice of this collection is greatly increased by the circumstance that so many examples here were burnt. We take it for certain that the critic's Ruysdael No. 4, which contained a windmill in the centre of the background, no longer exists at Holker. It was "a picture of the best time of the master, and of very solid carrying out." We have notes of but one Hobbema; our predecessor described three pictures of this artist. It does not, of course, follow that the other two were burnt in 1870. That example to which our attention was powerfully attracted displays 'A Cottage in a Wood,' on our left of a road which leads to the front; its high-pitched roof is partly hidden from us by intervening foliage; shadows lie on the foreground, the last being a piece of that sandy heathy waste of which Hobbema was fond, and often found in Drenthe and Friesland; here it extends to the distance. Masses of foliage fill the view on our right. The sky is worthy of Hobbema at his best; one could not say more for it. As generally with his work, the effect is spotty, the surface hard, and the shadows are blackish, but the whole is crisp and fresh, full of air and light.

We noticed a capital W. Van de Velde, which comprises 'A Yacht Saluting' and other craft, and is a picture of unusual warmth, brightness, and

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richness of colouring. Here is a very fine 'Land-scape' by Rubens. Two women, with cows, in a meadow in the foreground at evening; a stream appears in the distance and under sparse trees; sportsmen are on our right in front; one of them kneels and fires his gun at a bird. The centre figure is a woman in a red jacket, who walks towards our left with a milk-vessel on her head; close to her sits the other woman in the act of milking a cow. This picture, which is about four feet high by five and a half feet wide, has been carefully restored, but it is proverbially difficult to restore a Rubens; above all, this is true of one of his landscapes, the value of which depends on the rich and numerous glazings. On the whole, with regard to Rubens's landscapes in general, it needs a strong case to justify restoring one of them. Twenty years ago, Dr. Waagen described this picture as rather dry and sunk. Here is a fine Gaspar Poussin, a small landscape that contrasts strongly in feeling with the airy richness, the expansive homeliness of the Rubens. Two figures are on the margin of a gloomy pool; a dog approaches them. Trees and a rocky bank rise to great height, where, in the mid-distance, a castle stands. A thoroughly characteristic sky of the deepest, richest, most solemn blue is observable here; likewise the painter's equally characteristic glowing white cumuli. The process of darkening, due to his practice of painting on dark red grounds, which has injured so many of Gaspar's sublime pictures, has operated strongly on this one. The step from Gaspar Poussin to Müller is not a long one. We saw at Holker Hall two small works of great beauty by the latter, and especially enjoyed that one in which a white tower stands on a height above a rocky river. Here are two battle-pieces by Le Bourguignon, capital examples of his energetic powers in design, and comprising numerous figures of horsemen.

The name of "J. W. Stap" is not known to us; it is inscribed on a picture here, which is apparently Dutch and of the middle of the sixteenth century, and undoubtedly a work of very great merit; it displays an old man and a boy, full-sized, three-quarters length figures; the former is shown, with great animation and expressiveness of action, in the act of reading through his spectacles from a large book; the latter warms his hands over a pipkin or hand-warmer, it may be a sort of portable charcoal stove. The painting is highly finished, the colouring in a high and clear key, with unusual definition, the handling could not be better than it is.

Dr. Waagen mentioned as existing during his visit to Holker Hall many pictures besides the above; doubtless most of these were burnt. They comprise landscapes by De Heusch, Zuccarelli, Moucheron, Poelenberg, Canaletto, Pynacker, Verboom, and Wouvermans; sea-pieces by Van der Capella, and others; figure-pieces, including a good portrait of a man in a black dress, by Tintoret; a head of St. Francis, by Gigoli; 'Christ on the Mount of Olives,' by Bassano; a portrait of the Earl of Burlington, by Gainsborough; a 'Cupid,' by Schidone; an excellent picture by Roland Savery, with the characteristic subject, 'Daniel in the Lions' Den'—readers will remember the very interesting production of Savery's which is in the National Gallery; a portrait of Elizabeth Wriothesley, daughter of the Earl of Southampton, with a large parrot, by Van Somers.

The Duke of Devonshire preserves at Holker Hall many excellent specimens of the modern English school of water-colour painting. Among these works are 'Carnarvon Castle from the River,' by De Wint, and others by the same; 'Beaumaris' (?), by Prout; 'A Mountain Scene,' by Mr. B. C. Waite, one of his early and better productions; 'The Windy Day,' by D. Cox, showing water on our left near the front, and two herdsmen nearer to us than the trees, a sunlit and shadowed meadow, comprises cows reposing; beyond, belts of wind-tossed foliage, grey and shining where the breeze strikes them, are distinct and expressive; they extend across the picture from

right to left and end on the very horizon, where, in the sky, a white gleam marks the base of those tremendous cumuli which are piled in the bluest of wind-swept skies.

At Holker we saw a small number of drawings by old masters, including a 'St. Jerome,' in red chalk, by Guercino, a capital study of a single figure; a large composition of 'Christ's Vision,' including angels bringing emblems of the Passion and kneeling in ecstasy, sleeping apostles, and other figures, by Guido. This drawing has been squared for enlarging by pupils, or for reducing by an engraver. There are likewise two groups of cattle by Berchem, both drawings of great merit, and supplying proofs of the artist's industry and skill in draughtsmanship.

The next paper of this series will describe pictures in the collection of Sir Matthew Wilson, M.P., at Eshton Hall, near Skipton-in-Craven. These works have not hitherto been described, except three which were at the Royal Academy Winter Exhibition of this year, and included 'Cymon and Iphigenia,' a superb sketch by Rubens, and 'An Old Woman,' a wonderful early portrait by Rembrandt.

MUSIC

LEEDS FESTIVAL.

THE Yorkshire Musical Festivals, so long held in the cathedral city of York, and resuscitated at Bradford, now seem destined to be permanently fixed at Leeds. The first meeting, in 1858, originated in the opening of the magnificent Town Hall by Her Majesty; but, although it was successful, both artistically and financially, no attempt at a renewal was made before 1874, the incentive being probably the vast improvements which have taken place in the town, and the completion of the grand organ, partially erected in 1858. The inducement to assist the local medical charities was also strong, for there were four institutions, namely, the General Infirmary, the Public Dispensary, the House of Recovery or Fever Hospital, and the modern Hospital for Women and Children, which required, owing to the yearly increase in the number of patients, additional funds. The festival of 1874 was, therefore, resolved upon, and a guarantee fund of nearly 7,000*l.* was subscribed. The success of the performances enabled the General Committee of Management to hand over a sufficient surplus to the various charitable organizations. The experience gained in 1874 has been turned to good account in the arrangements for 1877, both administrative and professional. The Festival is again under the patronage of the Queen. The President is Earl Fitzwilliam, K.G., the Lord Lieutenant of the West Riding. In the list of vice-presidents are the names of the Mayor of Leeds, the High Sheriff of Yorkshire (Viscount Pollington), the Dukes of Norfolk and of Devonshire, the Bishops of Ripon, of Ely, and of Hereford, Lord Houghton, and other prominent noblemen, members of Parliament, gentlemen, &c., connected with the town and county. The general and executive committees are the leading inhabitants of Leeds, and over two hundred and fifty names appear in the list of guarantors. There are enough signs of the general interest taken in the approaching meeting. The working managers have had great difficulties to contend with in the negotiations to secure principal vocalists. In 1874 the leading solo singers were Mdlle. Tietjens, Mdlle. Singelli, Madame Otto-Alvsleben, Madame Trebelli-Bettini, Madame Patey, Mr. Lloyd, Mr. Bentham, Signor Campanini, Signor Perkins, Signor Agnesi, and Mr. Santley. Mr. Sims Reeves was also engaged, but, owing to a throat attack, did not sing, and has given up the festivals, owing to the pitch, which, however, does not seem to affect other singers as to induce them to confine their repertoire to ballads. The severe illness of the German *prima donna* has deprived the festival of her invaluable co-operation. Mdlle. Singelli and Madame Otto-Alvsleben have not visited England this year. Madame Trebelli is in the

Scandinavian provinces. Mr. Bentham is in Italy, as also Signor Campanini, and Signori Agnesi and Perkins are no more. Such are the changes in three years of artistic life. The Committee have, however, done the best they could under so many disappointments. In Mrs. Osgood, Madame Edith Wynne, and Mdlle. Albani there are three sopranos equally versed in the sacred school of singing. The incomparable voice of Madame Patey will again be heard, and this able artiste is associated with the German contralto, Fräulein Redeker, and a rising English vocalist, Miss Bölingbroke, now Mrs. Mudie. The two tenors will be Mr. E. Lloyd, who has now the lead, deservedly, and Mr. Shakespeare, who is new to the festivals, but who is an excellent musician. In Mr. Santley there is, of course, a tower of strength, and he has a very good coadjutor in Signor Foli. Mr. Cecil Tovey, the basso, sang at the last Birmingham Festival. Fine as the band was in 1874, Sir Michael Costa has nevertheless had *carte blanche* to extend its efficiency numerically, for there will be 20 first violins (M. Sainton, *chef d'attaque*), 18 second violins (Mr. Willy at their head), 14 violas (Mr. Doyle, principal), 13 violoncellos (M. Lasserre, principal), 13 double basses (Mr. White, principal), and one harp (Mr. Cheshire), a total of 79 strings as against 70 in 1874. The complement of wood, brass, and percussion is as before, with some few changes in the instrumentalists; but Messrs. Lazarus, W. L. Barrett, J. W. Hawes, Mann, T. Harper, S. Hughes, Smith, Pleasant, &c., are retained; the new players are Messrs. Brossa (flute), Dubrucq (oboe), Snelling (clarinet), Wotton and Haveron (bassoons), McGrath and Neuzerling (cornets), Webster and Hervey (trombones), &c. It is evident that the Leeds direction is sensibly alive to the paramount importance of a first-class orchestra, and equally alive has it been to the maintenance of the quality of the Northern chorists, for there are 79 sopranos, 41 contraltos, 41 altos, 65 tenors, and 67 basses, a total of 293 voices, selected not only in Leeds, but also from Bradford, Wakefield, Huddersfield, Barnsley, Salt- Aire, Gillingham, Dewsbury, Harrogate, Heckmond-wike, Horforth, &c. This choir has been carefully practised under the direction of Mr. Broughton. The Town Hall organist, Dr. Spark, will be at his post at one of the largest and finest instruments in Europe; indeed, for mechanical contrivances, particularly in the solo organ, the Leeds organ is not surpassed.

The works to be executed are of much interest. As 'St. Paul' was the opening oratorio of 1874, 'Elijah' has been naturally selected for the Wednesday morning, September 19th, for Monday and Tuesday are devoted to the rehearsals. On the evening of the 19th there will be a miscellaneous concert, opening with a dramatic cantata, 'The Fire King,' by Mr. Walter Austen, of Leeds. The words have been arranged by Miss Maud Hargreaves, from the poem which Sir Walter Scott translated from the German, and which was the first volume issued by Ballantyne, in 1799, called 'Apology for Tales of Terror.' In the second part there will be two overtures, Herr Wagner's 'Tannhäuser' and Nicolai's 'Merry Wives of Windsor.'

On Thursday morning there will be miscellaneous gleanings. Beethoven's Symphony, in F, No. 8; Weber's Overture, 'Der Freischütz,' and an organ solo by Dr. Spark, will be the instrumental pieces. In the second part, which will be commenced with Auber's 'Fra Diavolo' Overture, there will be a welcome revival, that of Mendelssohn's setting of Goethe's 'First Walpurgis Night,' a work which was first produced in London under the direction of the gifted composer in 1844, at the eighth concert of the Philharmonic Society; the solos were then sung by Miss A. Williams (Mrs. Price), Miss Dolby (Madame Sainton-Dolby), Mr. Allen, the tenor, and Herr Staudigl, the basso; the two last-mentioned artists are no more. On the Thursday evening Handel's 'Solomon,' with Sir M. Costa's additional accompaniments, will be performed, one of the composer's grandest works, and which has been utterly neglected at provincial

festivals. This will be a great day for the Yorkshire chorals to win distinction.

On the Friday morning the new oratorio by Prof. G. A. Macfarren, 'Joseph,' will be produced, and be conducted by his brother, Mr. Walter Macfarren, owing to the blindness of the composer. Dr. E. G. Monk, of York, has selected and arranged the Biblical text. At the evening concert on Friday the orchestral works will be Herr Raff's Symphony, in G minor, No. 4, and three Overtures, Rossini's 'Semiramide,' Sir W. Sterndale Bennett's 'Wood Nymphs,' and Spohr's 'Jessonda,' besides the ballet music from M. Gounod's 'Faust,' which, although executed at the National Grand Opera-house in Paris, is suppressed in the Italian adaptations of the opera in London. In this ballet music the French composer has treated Goethe's 'Walpurgis Night.'

The concluding morning of the Festival will be on Saturday, September 22nd. In the first part will be one of the Magnificats composed by J. S. Bach, that in D, for soprano, tenor, and bass soloists and chorus. This sublime production will be followed by the immortal Requiem of Mozart. The second part will be confined to Beethoven's oratorio, 'Christ on the Mount of Olives,' composed in 1800, and first performed in 1803. It is gratifying to find that the absurd adaptation called 'Engedi' has been abandoned at Leeds. The words used are by the Rev. J. Troutbeck, which version will be used for the first time, and it is to be hoped the original German text has been adhered to, in which the personality of Christ is so reverentially treated as to render a change of the text a most unjustifiable proceeding.

The honorary secretaries, Mr. J. W. Atkinson and Mr. F. R. Spark, have made excellent arrangements for the convenience and comfort of the visitors. The evening concerts will be commenced earlier than usual, the railway accommodation enabling amateurs to return at reasonable hours after the morning and evening performances. Independently of the manufactories to be inspected at Leeds, there are various attractions in the surrounding scenery, so that musical pilgrims will find ample temptation to make excursions to view Kirkstall Abbey, Bolton Abbey, and the Strid Bolton Woods, immortalized by the poem of Wordsworth.

Musical Gossip.

WHAT is designated a "Harvest Thanksgiving Concert" will be given at the Agricultural Hall, Islington, this afternoon (Saturday), when the 'Messiah' will be performed, with Madame E. Wynne, Madame Sterling, Messrs. Vernon Rigby and Lewis Thomas for the solos.

WITH reference to the cross suit which has been commenced in Paris by Madame Adeline Patti for the nullification of her marriage with M. le Marquis de Caux on the 27th of July, 1868, at the Roman Catholic Chapel in Clapham Park Road, on the ground that the ceremonial performed by the Very Rev. F. Plunkett was illegal, he not being a duly licensed priest, it must be remarked that this informality, if it existed, would be of no avail in the French courts, as marriage is essentially a civil contract; in France at all events the religious ceremony is gone through either as a custom or for conscience' sake. The Marquis and Marchioness de Caux were united, in fact, at the French Embassy on the 27th of July, the witnesses for the civil contract on behalf of the lady being the Duke of Manchester and Sir Michael Costa. There are, however, counts in the indictment of the wife against the husband to cancel the union in London, into which we will not enter, but Madame Patti states that she was unable to state her case fully when the "séparation de corps et de biens" was pronounced recently at the demand of her husband.

MADAME GERSTER-GARDINI is engaged at Baden-Baden, to sing at a concert to welcome the Emperor of Germany when he visits that town during the month. On the 7th of October, the Hungarian prima donna will sing at the festival of the

Männer-Gesangverein at Cologne, after which the lady goes to Russia, to fulfil her engagement for the Italian opera season at Moscow and St. Petersburg.

UNDER the title of "Liebhart's Grand Concerts, Vocal, Orchestral, and Military," with Sir Julius Benedict, Messrs. Ganz, Allen, and Kingsbury, officiating in turn as conductors, the Agricultural Hall at Islington was opened on the 28th ult. with a musical entertainment, which is to combine also a floral and fruit show. An orchestra of eighty players has been engaged to co-operate with six military bands. From the announcements, the conclusion must be drawn that the eye as well as the ear is to be captivated. The list of leading solo singers includes the names of nearly all our principal vocalists and instrumentalists.

THE last Promenade Concert but one at the Alexandra Palace took place on the 30th ult., and the final one will be this evening (Saturday).

MR. C. J. FROST, of the Chapel Royal, Savoy, was the player, on the 27th ult., on the grand organ of the Royal Albert Hall, at the Monday Afternoon Recitals.

THE long-promised new opera by Mr. Arthur Sullivan, the comedy-book of which is by Mr. Gilbert, will be produced at the close of October, at the Strand Opéra Comique, which will be under the direction of Mr. D'Oyley Carte.

MADAME ROSE HERSEE has been added to the list of singers at the Covent Garden Promenade Concerts.

MR. CARL ROSA has introduced a new tenor, a new soprano, and a new baritone-bass, during his opera performances, which ended in Dublin last Saturday. After a tour in the English provinces his company will be heard in London, but not before the new year.

THERE will be another series of operas in English at the Crystal Palace this month under the direction of Mr. Henry Corri, with Mr. Di Solla conductor.

THE Saturday Afternoon Orchestral Concerts, Mr. Manns conductor, will be resumed on the 29th inst.

DRAMA

THE WEEK.

LYCEUM.—'The Dead Secret,' a Play. Adapted by permission from the novel of that name by Wilkie Collins.

IT must not be supposed that the play successfully produced here on Wednesday represents, with any approach to fulness and variety, the novel on which it is founded. The Lyceum drama resolves itself into a good orthodox ghost-story, which, quite setting aside the subtle refinements of modern glamour, luminous hands, bouquets fresh from the Elysian Fields, and melodies condescendingly played by spiritual fingers upon material guitars, boldly relies upon the most primitive and venerable machinery of supernaturalism, and darts back at a bound from the days of Mr. Home to those of Mrs. Radcliffe.

Sarah Leeson, whose illegitimate child is brought up as that of her wealthy mistress, is imperatively commanded by the latter on her death-bed to write and witness a full confession of the fraud that has been practised. Instead of doing so, the afflicted mother, desirous to preserve her name from disgrace and her child from penury, hides the evidence in the house of her defunct mistress, a want of good faith which the ghost of the latter avenges by appearing to the delinquent so often and so menacingly that her reason and even her life are threatened. Eventually Sarah Leeson's daughter, then grown up, discovers the confession, and reveals it to her husband, who, though the humility of his

wife's origin is thus brought to light, loves her all the better for the frankness of her conduct. Ultimately the mother is tenderly forgiven by the child, an event upon which the avenging ghost ceases to pursue her, and leaves her with a reasonable prospect of happiness.

SUCH is the story, which, if it at no time greatly excited the audience, yet managed fairly to engage its interest. The wailings of dismal winds, the oaken bedroom with its four-post bedstead, the occasional apparition of the vindictive ghost through the gauzes, did not exactly produce awe, but awoke in the spectators that sort of sociable recognition which is due to very ancient acquaintances. Miss Bateman, as the heart-stricken and nervous mother, was thoroughly in earnest, and succeeded more than once in producing a marked impression upon the house. If in the earlier scenes her acting was too much in one key, the fault should rather be ascribed to the sameness of the positions she has to fill than to herself. Miss Virginia Francis was the vivacious yet loving daughter; Mr. Odell, as a pompous and inflated butler, furnished by the adapter with a slender fund of humour, managed so to improve it as to enliven the action when otherwise it would have flagged. Mr. Clifford Cooper and Mr. W. A. Pinero played with some effect the parts of a misanthropic master and servant, who were by no means in themselves essential to the story. Mr. Edmund Lyons, as a German artisan, had but one small opportunity in the piece, but he used it so well as to prove himself an artist.

Dramatic Gossip.

M. PAUL FERRIER has read at the Bouffes Parisiens a piece in three acts, the provisional title of which is 'Lectrice de l'Infante.' It will be played by MM. Danbray and Scipion, Madame Théo, and Madame Peschard. The theatre will reopen this day (1st of September), and in the course of the month the comedy will, it is expected, be given. M. Serpette will supply the music.

AMONG contemplated revivals at the Comédie Française are the 'Medée' of M. Legouvé, the 'Mahomet' of M. de Bormer, and the 'Hernani' of M. Victor Hugo.

THE new comedy of MM. Meilhac and Halévy, which will serve for the reappearance at the Variétés of M. Dupuis and Mlle. Chaumont, is definitely entitled 'La Cigale.'

A piece of Calderon has supplied the basis of a comic opera in three acts, by MM. Détrouy and Armand Silvestre, to which M. Gounod will furnish the score.

MISCELLANEA

"Papyrography."—Permit me to inquire in what way the "lithographic process, only quite recently discovered by one of the foremen of Messrs. Maclure & Macdonald" (see *Athenæum*, No. 2595, July 21, 1877, p. 83), differs from that invented and practised some five-and-twenty years ago at least by the late Mr. H. E. Strickland, F.R.S., who called it "Papyrography"? It is described, if I am not mistaken, in Sir W. Jardine's 'Contributions to Ornithology'; but I have not that work at this moment within reach. I know, however, that some of the plates therein contained are very successful examples of its results.

ALFRED NEWTON.

TO CORRESPONDENTS.—A. H. K.—G. M. (with many thanks)—F. J. B.—J. de P. T. (with thanks)—H. K.—S. S.—received.
C. of Heidelberg must observe that the statements were made in a letter.

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The Annual Bursary Competition will begin on Monday, the 22nd October, at 5 o'clock P.M., on which occasion there will be offered 42 Bursaries, of which 36 are in the patronage of the University, and 6 in that of the Magistrates and Town Council of Aberdeen, and other patrons. All but 10 are open without restriction. They are tenable for four years of the curriculum, and are of the following annual value, viz. two of 25l.; three of 20l.; four of 15l.; eleven of 10l.; one of 18l.; seven of 16l.; two of 14l.; four of 12l.; one of 10l. 10s.; six of 10l.; and three of inferior value.

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Of Bursaries under private patronage, 53 were vacant at the close of the last Session, viz. One of 40l.; two of 30l.; one of 24l.; two of 23l. 10s.; one of 18l. 15s.; one of 17l.; one of 16l. 10s.; one of 16l.; one of 15l.; two of 14l.; seven of 12l.; one of 11l. 5s.; and two of inferior value.

For passing over the Junior Latin or Greek Classes, on MONDAY, the 29th October, at Ten A.M. [Students intending to come forward for either of the three last-mentioned Examinations are required to give in their names to the Secretary of the Faculty, Professor BLACK, not later than the preceding day.]

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The Seventieth Year of the Company's existence and its Fourteenth Quinquennium having terminated on the 30th June last, the Directors have to submit to the Proprietors a brief Report of the progress made during the year, and a statement more in detail of the Company's Assets and Liabilities at the end of it, as ascertained after the usual exhaustive investigation.

The Annual Premiums on New Assurances effected during the year have amounted to 14,409, 12s. 6d., and the Total Premiums to 329,766, 1s. 4d.

The Premiums for Re-assurances amount to 83,934, 7s. 10d., and the claims on Decease of Lives and from Endowment Assurances to 3,956, 12s. 1d.

The Interest and Dividends on the Company's Investments have amounted to 137,043, 16s. 6d., and if to this sum be added a balance of profits, viz., 5,403, 4s. 8d., mainly arising from the sale of securities, the rate of interest for the year will be 4, 13s. 3d. per cent.

The Expenses of Management for the year are 15,561, 16s. 6d.

The operations of the year have resulted in the addition to the Company's Funds of 33,072, 1s.

With regard to the results of the quinquennial investigation, the Directors invite attention to the Schedule annexed (the 'Summary and Valuation of the Policies' furnished to the Board of Trade—not here printed), which exhibits the sums assured in each class of Assurance with the Premiums payable in respect of them, and also the net liability determined by the valuation of the several contracts specified. This liability, it will be seen, is estimated at the sum of 2,735,303, 1s., and comprises every risk in force at the date of valuation. By the Balance Sheet, also annexed, it appears that the funds of the Company at that date, after deduction of all outgoings, amounted, exclusive of the Proprietors' capital, to the sum of 2,826,184, 1s., and hence it follows that a surplus exists, available for distribution at the present time, of 183,881, 1s.

Out of this surplus, the Directors propose to divide 180,458, 1s., carrying forward 3,423, 1s. to the next account.

It must be understood that, after disbursement of this sum, the Company will be left with a present surplus income of 54,326, 1s. per annum, applicable solely to the payment of future expenses and to the formation of a fund for future divisions, and not required to meet the claims under existing assurance and annuity contracts; these last being provided for by a present reserve of 7,738,781, 1s., and an income of 19,341, 1s., now arising from annual premiums, and co-existent with the duration of the outstanding risks.

The portion of the surplus to be allotted to the Policy-holders is 143,366, 1s., and the consequent amount to be added to each assurance will be communicated to those interested as soon as possible. The portion to be allotted to the Proprietors will suffice for the payment to them of 11s. 6d. per share, and such payment will be made on and after the first Monday in October next, together with the year's dividend then falling due.

The Directors have to express their great regret at the loss of their late colleague, Mr. Charles Chatfield. It will be for the Proprietors to elect a candidate to fill the vacancy thus created.

Mr. Russell, Mr. Murray, and Mr. Bischoff, who retire from the Direction this year, offer themselves for re-election. Mr. Rose, who retires from the Auditorship by rotation, also offers himself for re-election.

Balance-Sheet of the Eagle Insurance Company on the 30th June, 1877.

Liabilities.		
Shareholders' Capital, including	4,167,587 10 0	
Assurance Fund, including 60,428, 1s.		
Reserve for Annuities	5,539,138 9 11	
Total Funds	23,107,053 19 11	
Claims admitted but not paid	90,476 2 9	
Less amount to be received for Re-assurances	6,090 0 0	
	84,476 2 9	
Other Sums owing by the Company:		
Dividends	4,698 12 6	
Sundry Creditors, Mortgagees and others	1,433 11 4	6,092 3 10
	43,197,623 6 6	

Assets.		
Mortgages on Property within the United Kingdom	21,779,848 19 3	
Loans on the Company's Policies	232,375 0 4	
Investments:		
In British Government Securities	123,014 8 4	
In Colonial Government Securities	72,241 9 5	
In Foreign Government Securities	152,909 6 4	
In Railway Debenture Stocks, and fully paid-up	145,654 10 1	
Preference and other Stocks	82,867 3 8	
In House Property	101,869 15 9	
In Ground Rents	14,036 18 7	
In Reversionary Interests	291,884 15 1	
In Borough and Parochial Rates	10,532 15 10	
In New York City Bonds	11,608 5 0	
Loans on Personal Security	8,771 8 7	
Agents' Balances	18,532 15 10	
Outstanding Premiums	16,514 15 6	
Do. Interest	23,353 2 8	
Furniture and Fixtures	1,651 15 5	
Balance on Sundry Receivership and Rental Accounts	944 3 0	
Cash:		
On Deposit	240,000 0 0	
Hand and on Current Account	17,536 13 8	257,536 13 8
	43,197,623 6 6	

Examined and approved—
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